NEC

NEC Express5800 series

Power Console Plus™

User's Guide

ONL-4140bN-COMMON-119-99-0508

Preface

This manual explains "Power Console Plus" that is used with NEC Express5800 series connected with the LSI Logic disk array controller.

This manual is intended for persons who are familiar with Windows functions and operation methods. See the Windows Online Help and Manual for Windows operation for further information.

Read other manuals related to this disk array controller when using Power Console Plus. If using an optional disk array controller, read the manual provided with the disk array controller as well.

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1. Overview

1.1 MAJOR FUNCTIONS

Power Console Plus is a utility to RAID system Use of Power Console Plus enables operations (e.g., monitoring and maintenance) of RAID systems that are constructed on local NEC Express servers and NEC Express servers connected through networks (TCP/IP). The operations can be done online on graphical screens without the system being stopped.

Power Console Plus has the following features:

Supporting the Wizard function to facilitate configuration

Enabling the change of RAID levels

Being compatible with SAF-TE

Supporting the performance monitor

Supporting enclosure functions such as temperature monitoring, power monitoring, and fan monitoring

Enabling the settings of Write, Read, and Cache policies for each logical drive

Supporting the save and restore functions for configuration

Enabling the display of the SCSI transfer rate

1.2 COMPONENTS

Power Console Plus consists of the following six components:

SNMP Agent

Install SNMP Agent in the NEC Express server in which the MegaRAID controller is installed.

MegaRAID Service Monitor

Install MegaRAID Service Monitor in the NEC Express server in which the MegaRAID controller is installed.

Synchronize Cache Utility

Install Synchronize Cache Utility in all servers and management PCs.

MegaRAID Client

Control the RAID system on graphical screens.

Install MegaRAID Client in the NEC Express server in which the MegaRAID controller is installed or in the management PC that is connected through the NEC Express server and network.

MegaRAID Server

Enables control of the MegaRAID controller via the network.

Install MegaRAID Server in the NEC Express server in which the MegaRAID controller is installed.

MegaRAID Registration Server

Enables control of the MegaRAID controller via the network.

Install in one of NEC Express servers or management PCs that are connected through the network.

The above components must be installed correctly for establishing the environment to use Power Console Plus.

Power Console Plus doesn't support Standby/Hibernation state. Do not perform transition to the Standby/Hibernation state.

Power Console Plus components to be installed are different between the target servers and management PC.

Server

NEC Express server in which the MegaRAID controller is installed

Install the following components in this server:

– SNMP Agent

– MegaRAID Service Monitor

– MegaRAID Client

Management PC

Management PC that monitors and controls servers via the network (TCP/IP)

Install the following components in the management PC:

– MegaRAID Client

Management PC does not guarantee operation on Client, which uses Terminal Server, Terminal Server Emulator, or WBT.

Start Power Console Plus on management PC after powered on the machine on which the "Server" or "Management Server" is installed.

Management server

Server that manages all servers connected to the same network (TCP/IP).

Install the following components in the management server:

– MegaRAID Server

– MegaRAID Registration Server

2. Server Setup

This section explains how to setup the Power Console Plus in the NEC Express server configuring RAID system

2.1 OPERATING ENVIRONMENT

This section explains the operating environment required for Power Console Plus to operate.

Hardware

- Machine:
  NEC Express5800 series server configuring RAID system
- Memory size:
  Large enough for OS operation + 8MB or more
- Free space of the hard disk:
  10MB or more
- Display unit:
  Screen size 1024 × 768 or larger (If the screen size is 800 × 768 or smaller, menu buttons may not be displayed. Use the small-sized font.)
- Required peripheral equipment:
  Network Interface Card
  CD-ROM drive
  Pointing device such as a mouse

Software

- Microsoft Windows 2000
- Microsoft Windows 2003 Server

2.2 PREPARATIONS

This section explains prerequisites for setup.

The driver for the RAID system must be installed.

The SNMP service of Windows must be installed.

TCP/IP setting for Windows must be completed.

Updating of the system must be completed.

The machine must be logged on by an Administrator group.

2.3 INSTALLATION

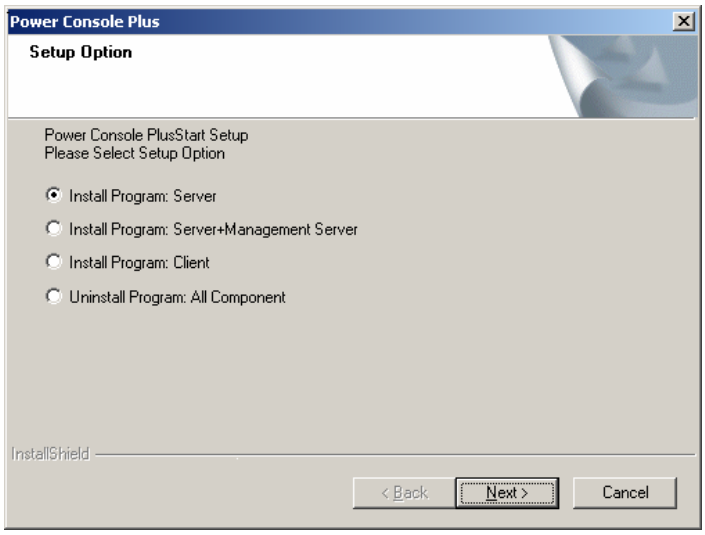
Take the following steps to install Power Console Plus:

1. Power on the server to start Windows 2000 / Windows 2003 Server.
2. Set the provided CD-ROM labeled as "EXPRESSBUILDER" in the CD-ROM drive.
3. Run "SETUP.EXE" which is in the "ESMPRO\en\PCON" in CD-ROM using Explorer, and so on.

   [Setup Option] dialog box appears.

4. Select [Install Program: Server] and click [Next].

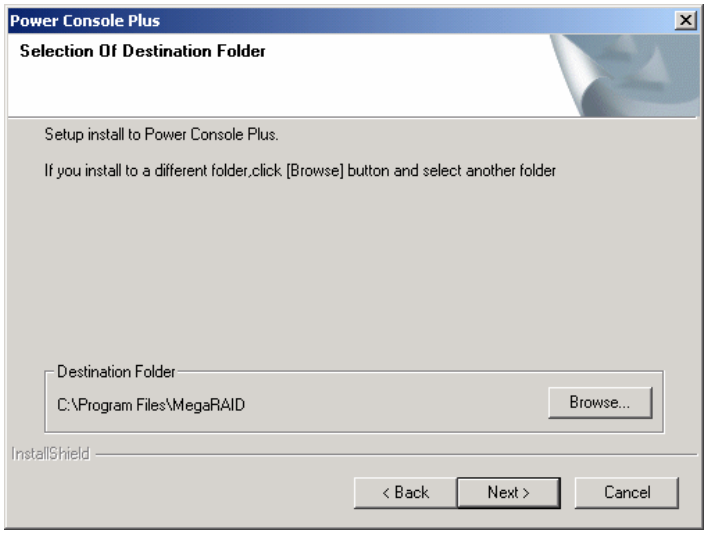
   [Selection Of Destination Folder] dialog box appears.



NOTE: To give management server functions to this server, select [Component: Server + Management Server]] and click on [Next] button.

5. Specify the directory to install the Power Console Plus, and click [Next].

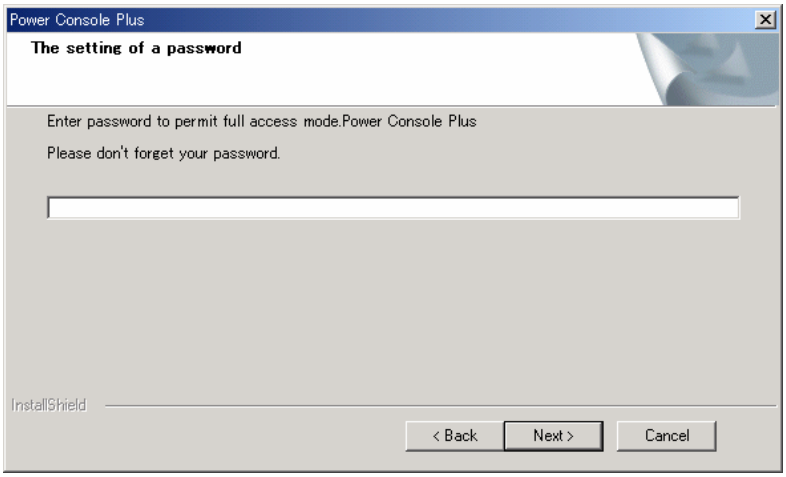
   [The setting of a password] dialog box appears.



NOTE: To change the installation directory, click on [Browse...] and specify the desired directory.

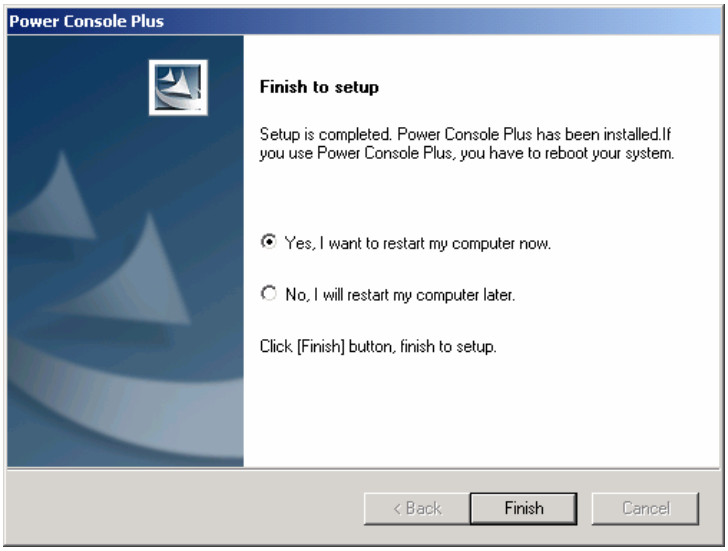
6. Enter the password to permit full access to Power Console Plus, and click [Next].

Installation starts. When automatic setup completes, [Finish to Setup] screen appears.


Power Console Plus
The setting of a password
Enter password to permit full access mode.Power Console Plus
Please don't forget your password.
InstallShield
< Back
Next >
Cancel

7. Select "Yes, I want to restart my computer now" and click [Finish].

The system restarts.


Power Console Plus
Finish to setup
Setup is completed. Power Console Plus has been installed.If you use Power Console Plus, you have to reboot your system.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click [Finish] button, finish to setup.
< Back
Finish
Cancel

2.4 ENVIRONMENT SETUP

Set up the environment as explained below.

Setting HOSTS File

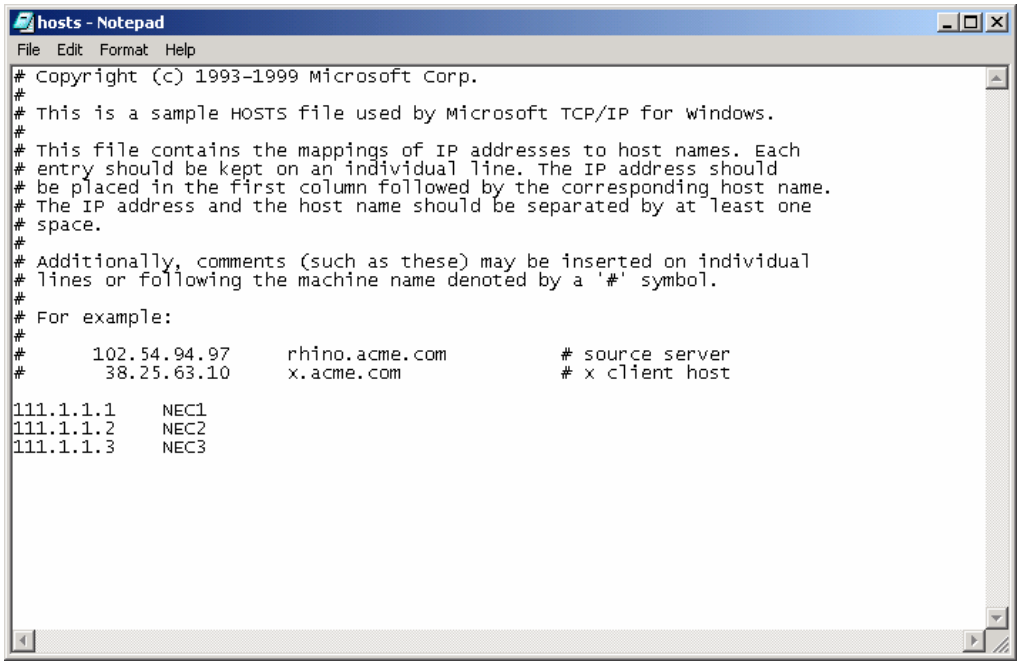
Setting of HOSTS file is needed when control is performed via the network. Set the server information, management server information, and management PC information of Power Console Plus into the HOSTS file that is provided/browsed by the TCP/IP of Windows.

IP addresses and host names of all servers and management Server and management PCs that are controlled via the network

IP address and host name of the management server

Use a text editor (e.g., notepad) to add the information to the HOSTS file. (Line feed is necessary at the end of the added lines.)

With Windows 2000, the HOSTS file is C:\Winnt\System32\Drivers\etc\hosts. With Windows 2003 Server, the HOSTS file is C:\Windows\System32\Drivers\etc\hosts.


hosts - Notepad
File Edit Format Help
Copyright (c) 1993-1999 Microsoft Corp.
#
This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
This file contains the mappings of IP addresses to host names. Each
entry should be kept on an individual line. The IP address should
be placed in the first column followed by the corresponding host name.
The IP address and the host name should be separated by at least one
space.
#
Additionally, comments (such as these) may be inserted on individual
lines or following the machine name denoted by a '#' symbol.
#
For example:
#
102.54.94.97 rhino.acme.com # source server
38.25.63.10 x.acme.com # x client host
111.1.1.1 NEC1
111.1.1.2 NEC2
111.1.1.3 NEC3

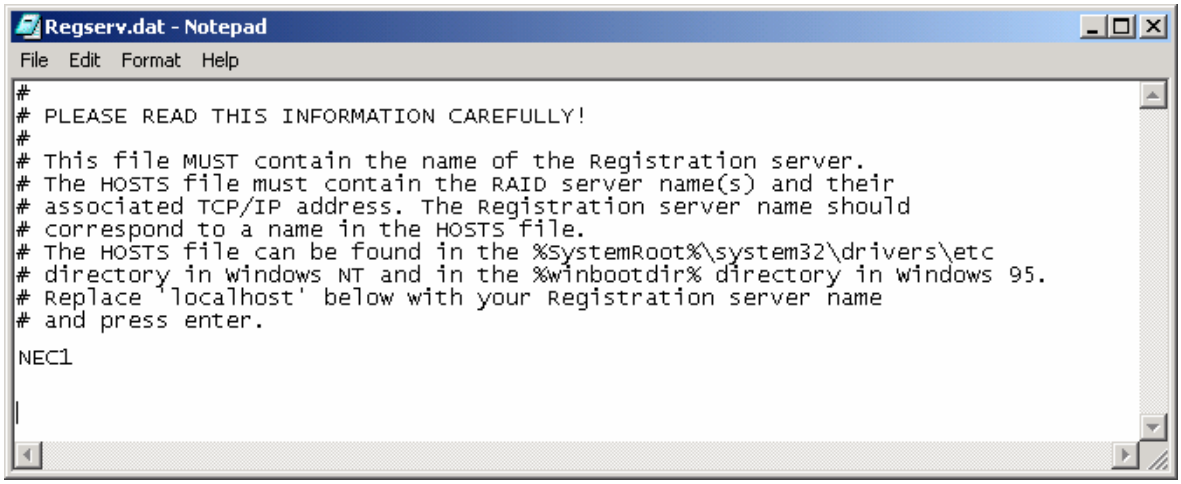
Modifying REGSERV.DAT File

Modification of the management server information is necessary when control is performed via the network. Modify management server information registered in the REGSERV.DAT file that is provided/browsed by Power Console Plus. (The default host name registered is localhost.)

Host name of the management server

Use a text editor (e.g., notepad) to modify the REGSERV.DAT file. Line feed is necessary at the end of each line.
Please register one host name of the server and management server into REGSERV.DAT file.

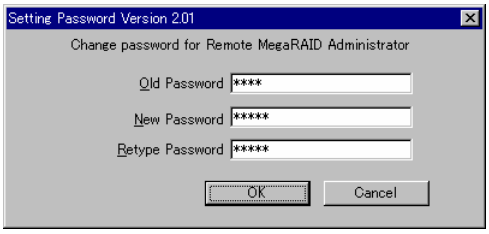
With Windows 2000, the REGSERV.DAT file is placed in C:\Winnt\System32\ Drivers\etc\ regserv.dat. With Windows 2003 Server, the HOSTS file is C:\Windows\System32\Drivers\etc\regserv.dat.


Regserv.dat - Notepad
File Edit Format Help
#
PLEASE READ THIS INFORMATION CAREFULLY!
#
This file MUST contain the name of the Registration server.
The HOSTS file must contain the RAID server name(s) and their
associated TCP/IP address. The Registration server name should
correspond to a name in the HOSTS file.
The HOSTS file can be found in the %SystemRoot%\system32\drivers\etc
directory in Windows NT and in the %winbootdir% directory in Windows 95.
Replace 'localhost' below with your Registration server name
and press enter.
NEC1

Change of the password permitting the full access

To change the password specified at installation that permits the full access, use the password change tool SETPASS.EXE provided by Power Console Plus.

Execute the password change tool SETPASS.EXE in the subfolder "rserver" in the installation destination of Power Console Plus using Explorer and so on.



Enter the old password in the Old Password field, and the new password in the New Password/Retype Password field, and then click [OK].

If you have forgotten the old password, delete the password file RAIDPASS.VAL, and then set the new password by executing the password change tool SETPASS.EXE.

The password file RAIDPASS.VAL is C:\Winnt\System32\Drivers\etc\raidpass.val. In case of Windows 2003 Server, the HOSTS file is C:\Windows\System32\Drivers\etc\raidpass.val.

IMPORTANT: The password file RAIDPASS.VAL is an important file containing the password that permits the full access through Power Console Plus.

In consideration of security, change the NTFS file access authority for the password file RAIDPASS.VAL to Administrator authority, etc. so that only administrators are permitted to delete/transfer data.

2.5 UNINSTALLING POWER CONSOLE PLUS

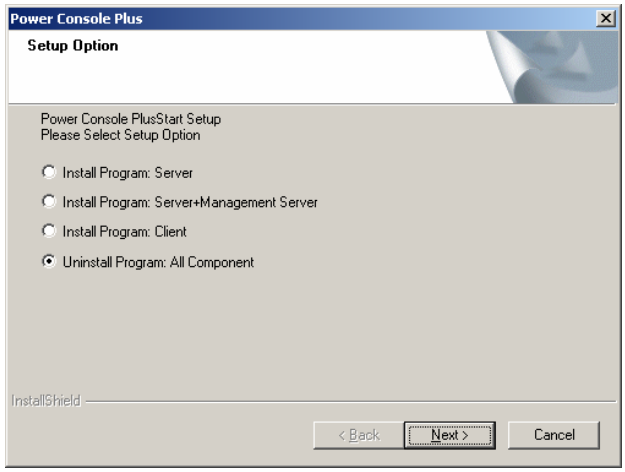
Take the following steps to uninstall Power Console Plus:

1. Power on the server and start Windows.
2. Set the provided CD-ROM "EXPRESSBUILDER" in the drive.
3. Execute "SETUP.EXE" which is in the "ESMPRO\en\PCON" in CD-ROM from Explorer, and so on.

   [Select Setup Options] screen appears.

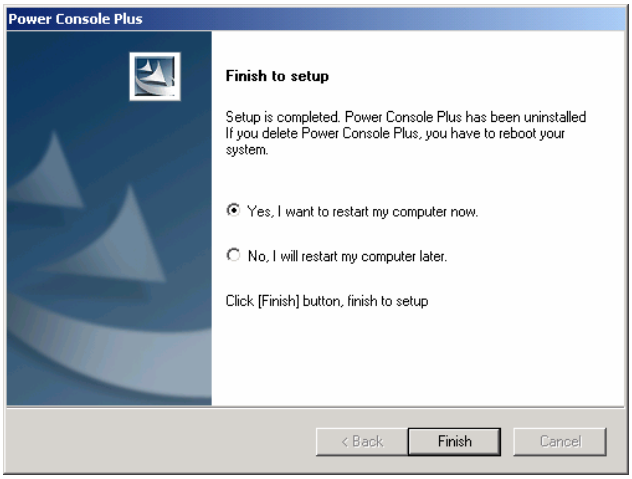
4. Select the [Uninstall Program: All Component], and click [Next].

   Uninstallation starts. When automatic setup completes, [Finish to setup] screen appears.



5. Select the "Yes, I want to restart my computer now", and click on [Finish].

   The system restarts.


Power Console Plus
Finish to setup
Setup is completed. Power Console Plus has been uninstalled
If you delete Power Console Plus, you have to reboot your system.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click [Finish] button, finish to setup
< Back
Finish
Cancel

3. Management PC Setup

This section explains Power Console Plus setup in a computer that manages servers via the network (TCP/IP).

3.1 OPERATING ENVIRONMENT

This section explains the operating environment required for Power Console Plus to operate on a management PC.

Hardware

- Machine:
  NEC Express5800 series
  PC98-NX series
  PC/AT-compatible machine (which contains Intel Pentium or CPU at least equivalent to it)
- Memory size: Large enough for OS operation + 8MB or more
- Free space of the hard disk: 10MB or more
- Display unit: Screen size 1024 × 768 or larger (If the screen size is 800 × 768 or smaller, menu buttons may not be displayed. Use the small-sized font.)
- Required peripheral equipment:
  Network Interface card
  CD-ROM drive
  Pointing device such as a mouse

Software

- Microsoft Windows 2003 Server
- Microsoft Windows 2000
- Microsoft Windows NT Version 4.0

  (Windows NT Version 4.0 Service Pack 5 or later + Internet Explorer 4.01 Service Pack 2 or later)
- Microsoft Windows 95/98/Me
  (Internet Explorer 4.01 Service Pack 2 or later)

3.2 PREPARATIONS

This section explains prerequisites for setup.

TCP/IP setting for Windows must be completed.

Updating of the system must be completed (when NEC Express server is used)

The machine must be logged on by an Administrator group. (Windows 2003 Server/ NT / 2000)

Power Console Plus must be uninstalled (if installed).

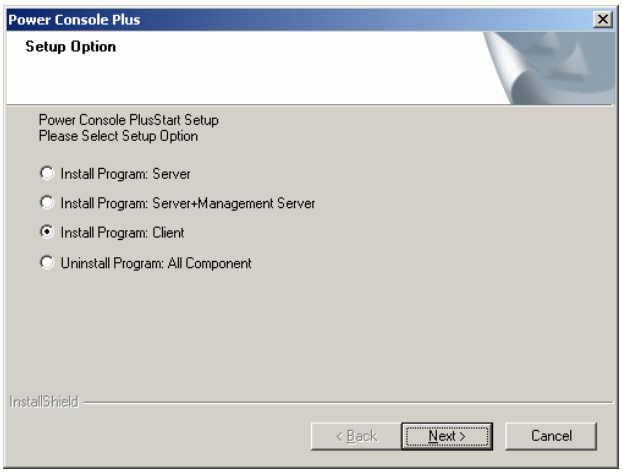
3.3 INSTALLATION

Take the following steps to install Power Console Plus:

1. Power on the server to start Windows.
2. Set the provided CD-ROM labeled as "EXPRESSBUILDER" in the CD-ROM drive.
3. Run "SETUP.EXE" which is in the "ESMPRO\en\PCON" in CD-ROM using Explorer, and so on.

   [Setup Option] dialog box appears.
4. Select [Install Program: Management PC] and click [Next].

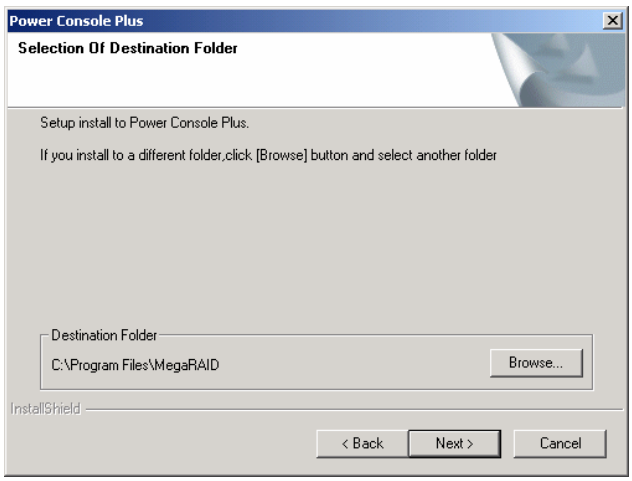
   [Selection of Destination Folder] dialog box appears.



NOTE: To give management server functions to this server, select [Component: Server + Management Server]] and click on [Next] button.

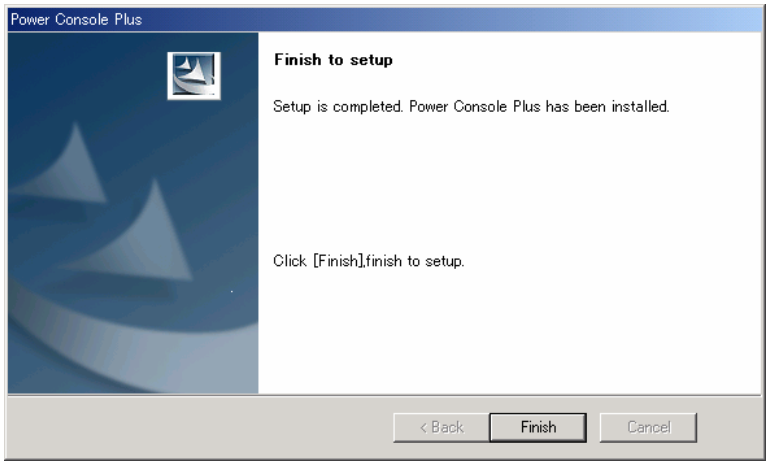
5. Specify the directory to install the Power Console Plus, and click [Next].

Installation starts. When automatic setup completes, [Finish to Setup] screen appears.



NOTE: To change the installation directory, click on [Browse...] and specify the desired directory.

6. Click [Finish].



* Screens shown here is the installation performed on Windows 2000.

3.4 ENVIRONMENT SETUP

Set up the environment as explained below.

Setting HOSTS File

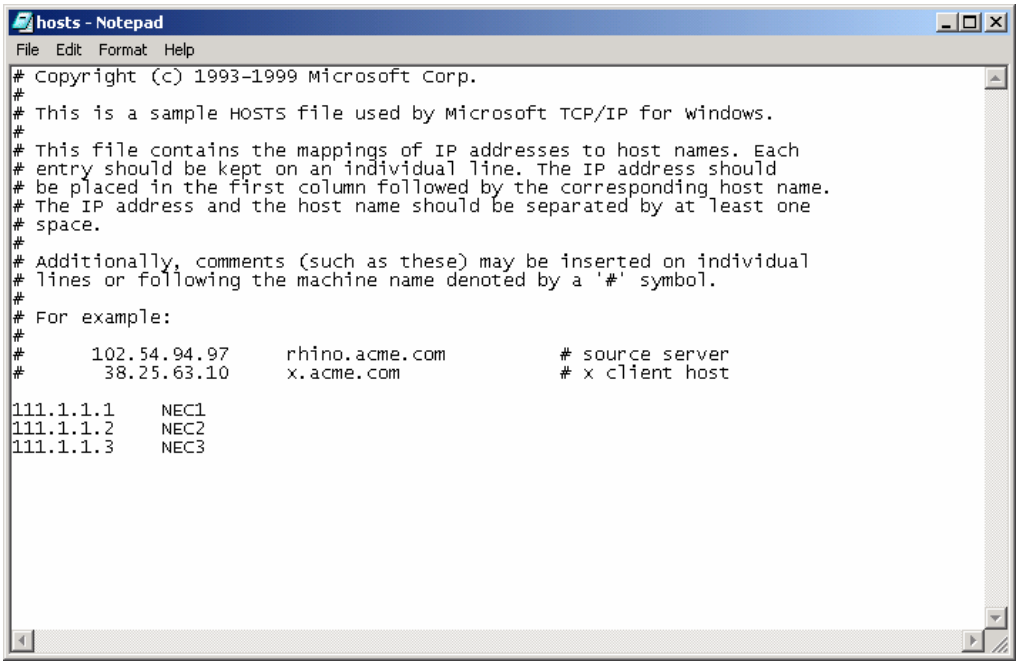
Set the server information, management server information, and management PC information of Power Console Plus into the HOSTS file that is provided/browsed by the TCP/IP of Windows.

IP address and host name for all servers and management servers and management PCs to be controlled via network

IP address and host name for management server

Use a text editor (e.g., notepad) to add the information to the HOSTS file. (Line feed is necessary at the end of the additional line.)

With Windows NT/2000, the HOSTS file is C:\Winnt\System32\Drivers\etc\hosts. With Windows 95/98/Me, the HOSTS file is C:\Windows\hosts. With Windows 2003 Server, the HOSTS file is C:\Windows\System32\Drivers\etc\hosts.


hosts - Notepad
File Edit Format Help
Copyright (c) 1993-1999 Microsoft Corp.
#
This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
This file contains the mappings of IP addresses to host names. Each
entry should be kept on an individual line. The IP address should
be placed in the first column followed by the corresponding host name.
The IP address and the host name should be separated by at least one
space.
#
Additionally, comments (such as these) may be inserted on individual
lines or following the machine name denoted by a '#' symbol.
#
For example:
#
102.54.94.97   rhino.acme.com   # source server
38.25.63.10   x.acme.com   # x client host
111.1.1.1 NEC1
111.1.1.2 NEC2
111.1.1.3 NEC3

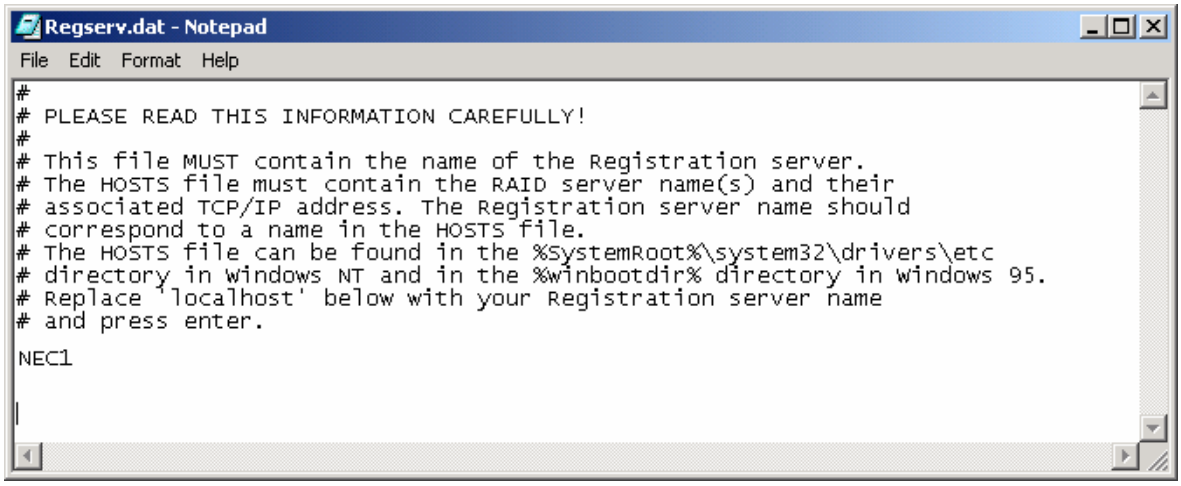
Modifying REGSERV.DAT File

Modify management server information registered in the REGSERV.DAT file that is provided/browsed by Power Console Plus. (The default host name registered is localhost.)

Host name of the management server

Use a text editor (e.g., notepad) to modify the REGSERV.DAT file. Line feed is necessary at the end of each line.
Please register one host name of the server and management server into REGSERV.DAT file.

REGSERV.DAT file is placed in C:\winnt\System32\Drivers\etc\regserv.dat for Windows 2000/NT, C:\System32\Drivers\etc\regserv.dat for Windows 95/98/Me. With Windows 2003 Server, the REGSERV.DAT file is C:\Windows\System32\Drivers\etc\regserv.dat.


Regserv.dat - Notepad
File Edit Format Help
#
PLEASE READ THIS INFORMATION CAREFULLY!
#
This file MUST contain the name of the Registration server.
The HOSTS file must contain the RAID server name(s) and their
associated TCP/IP address. The Registration server name should
correspond to a name in the HOSTS file.
The HOSTS file can be found in the %SystemRoot%\system32\drivers\etc
directory in Windows NT and in the %winbootdir% directory in Windows 95.
Replace 'localhost' below with your Registration server name
and press enter.
NEC1

3.5 UNINSTALLING POWER CONSOLE PLUS

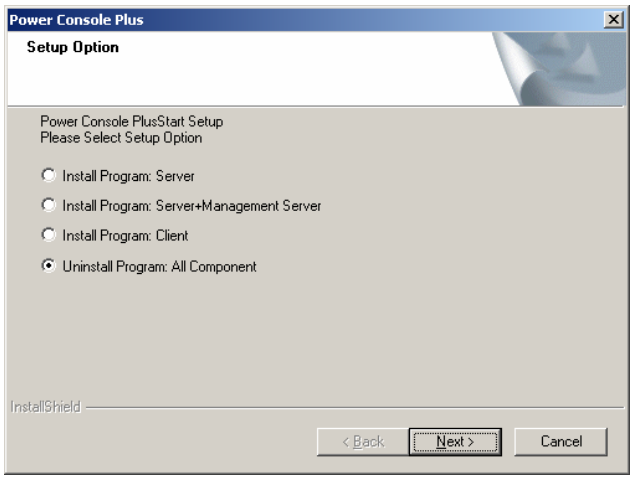
Take the following steps to uninstall Power Console Plus:

1. Power on the server and start Windows.
2. Set the provided CD-ROM "EXPRESSBUILDER" in the drive.
3. Execute "SETUP.EXE" which is in the "ESMPRO\en\PCON" in CD-ROM from Explorer, and so on.

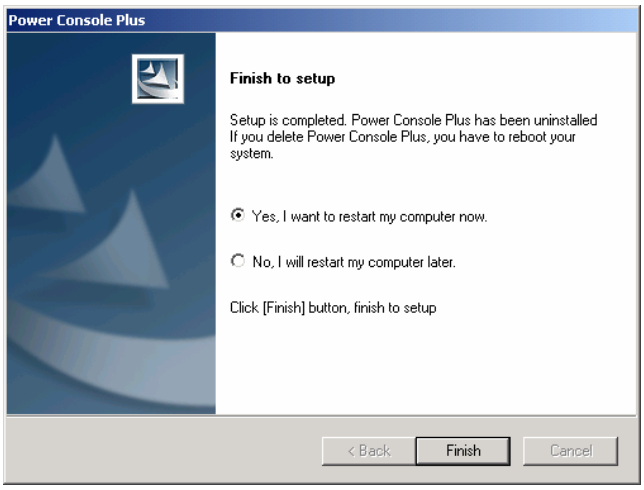
   [Setup Options] screen appears.

4. Select the [Uninstall Program: All Component], and click [Next].

   Uninstallation starts. When automatic setup completes, [Finish to setup] screen appears.



5. Click [Finish].

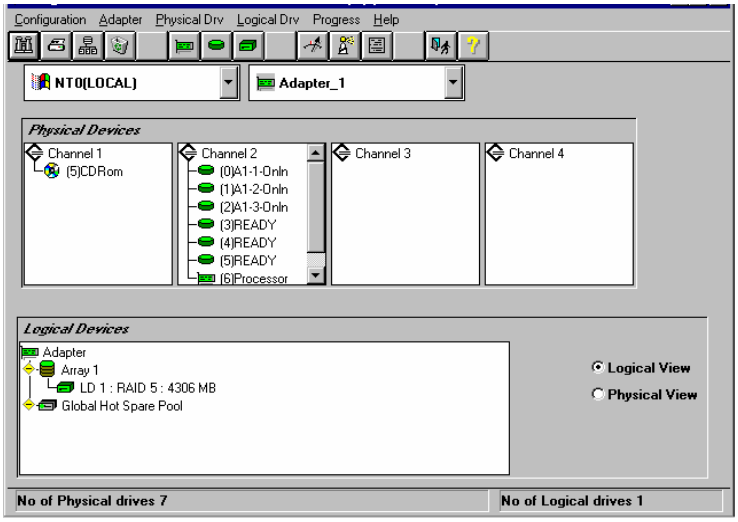

Power Console Plus
Finish to setup
Setup is completed. Power Console Plus has been uninstalled
If you delete Power Console Plus, you have to reboot your system.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click [Finish] button, finish to setup
< Back
Finish
Cancel

* Screens shown here is the uninstallation performed on Windows 2000.

4. Features of Power Console Plus

This section explains the features of Power Console Plus.

The screen as shown below appears when Power Console Plus is started.



Power Console Plus Screen Layout

Element	Description
Menu Bar	Select options from Configuration, Adapter, Physical Drv, Logical Drv, Progress, or Help menus.
Toolbar	Click on a toolbar icon to select an option.
Combo box	Select a controller or server.
Physical Devices View	Displays the physical devices connected to the SCSI Channels.
Logical Devices View	Displays hot-spare devices and logical drives.
Radio button	Choose Logical View or Physical View on Logical Devices View.
Bottom	Displays the number of physical drives and logical drives for the array being connected with the system.

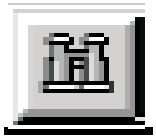
NOTES:

- You cannot choose a different server if an operation such as a rebuild, Performance Monitor display, or drive reconstruction is in progress.
- You cannot access the new server if Power Console Plus is already running.
- You cannot change from View Only mode to Full Access mode. You must exit Power Console Plus and then run Power Console Plus again. Choose the server, then choose Full Access mode and enter the password when prompted.

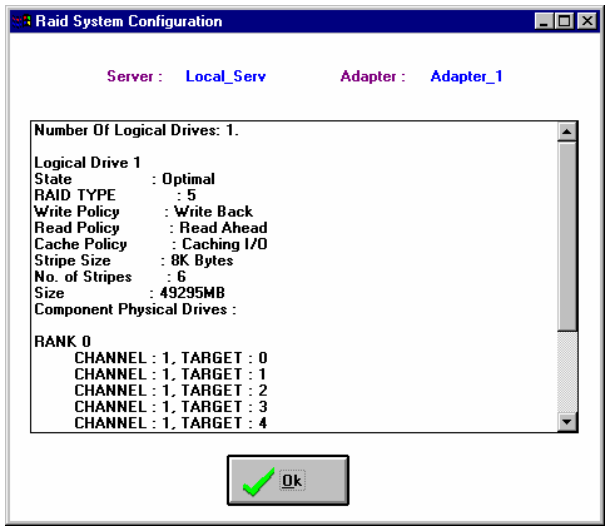
4.1 TOOLBAR ICONS

Power Console Plus includes several toolbar icons at the top of the screen. These icons provide easy access to Power Console Plus features.

Display Configuration Icon



Click on this icon to display the current RAID system configuration.


Raid System Configuration
Server : Local_Serv
Adapter : Adapter_1
Number Of Logical Drives: 1.
Logical Drive 1
State : Optimal
RAID TYPE : 5
Write Policy : Write Back
Read Policy : Read Ahead
Cache Policy : Caching I/O
Stripe Size : 8K Bytes
No. of Stripes : 6
Size : 49295MB
Component Physical Drives :
RANK 0
CHANNEL : 1, TARGET : 0
CHANNEL : 1, TARGET : 1
CHANNEL : 1, TARGET : 2
CHANNEL : 1, TARGET : 3
CHANNEL : 1, TARGET : 4
Ok

Print Icon

Click on this icon to print the current RAID system configuration.

Wizard Configuration Icon

Click on this icon to configure the RAID system.

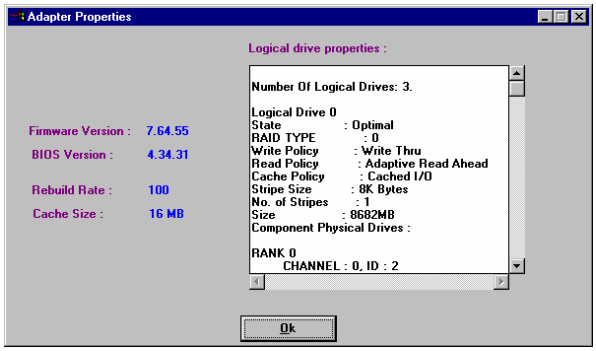
Clear Configuration Icon

Do not click on this icon.

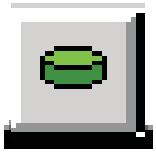
Clicking on this icon will erase the current configuration information.

Adapter Properties Icon

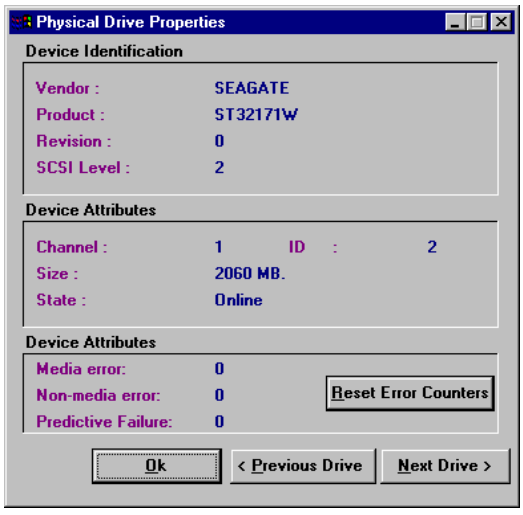
Click on this icon to display the properties of the selected controller.


Adapter Properties
Logical drive properties :
Number Of Logical Drives: 3.
Logical Drive 0
State : Optimal
RAID TYPE : 0
Write Policy : Write Thru
Read Policy : Adaptive Read Ahead
Cache Policy : Cached I/O
Stripe Size : 8K Bytes
No. of Stripes : 1
Size : 8682MB
Component Physical Drives :
RANK 0
CHANNEL : 0, ID : 2
Firmware Version : 7.64.55
BIOS Version : 4.34.31
Rebuild Rate : 100
Cache Size : 16 MB
Ok

Physical Drive Icon

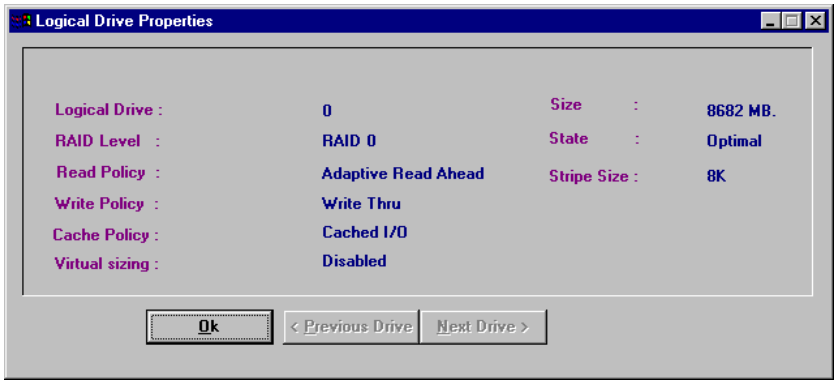


Click on this icon to display the properties of the selected physical drive.

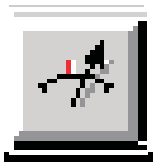


Logical Drive Icon

Click on this icon to display the properties of the selected logical drive.

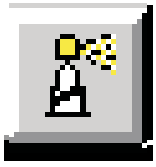


Rebuild Rate Icon



Click on this icon to change I/O rate for rebuild or reconstruction.

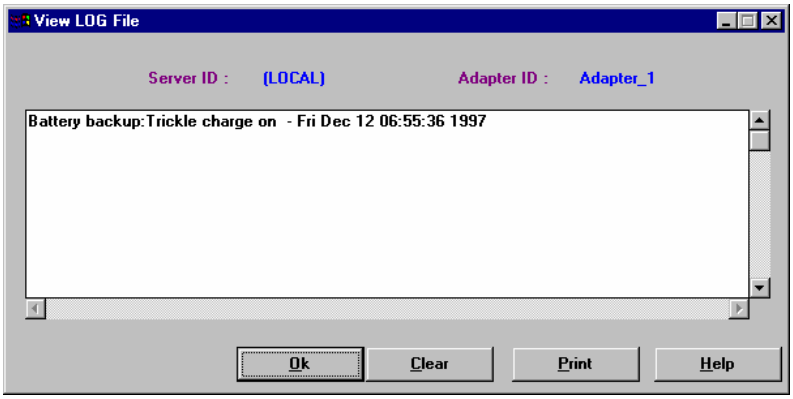
Rescan Icon



When you click on this icon, the currently selected controller scans its channels again to make sure that all drive configuration information is current. The configuration information will be updated to the latest one.

Display Log Icon

Click on this icon to display the log as shown below.



NOTE: Power Console Plus logs all events to Raid.log. Raid.log is created in the same directory where Power Console Plus runs.

If the Power Console Plus is installed in "C:\Program Files\MegaRAID", then "C:\Program Files\MegaRAID\Client" will become the working directory.

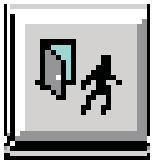
NVRAM Icon

The log of NVRAM is displayed.

Bad Block Log Icon

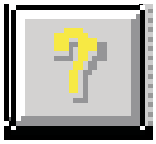
The Bad Block information on a drive is displayed.

Exit Icon



Click on this icon to quit Power Console Plus.

Help Icon



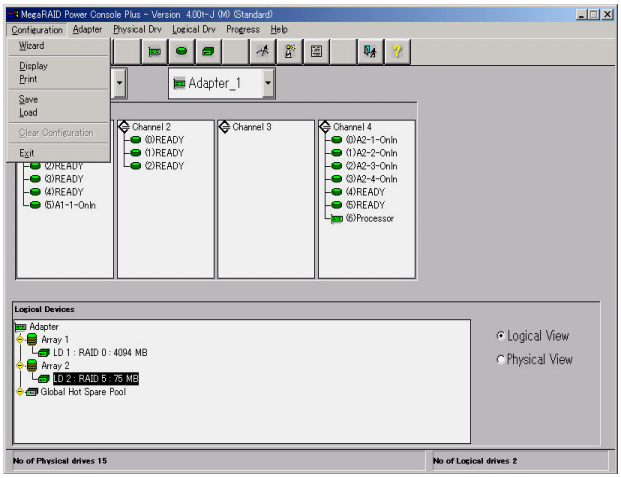
Click on this icon to display information about Power Console Plus.

4.2 MENUBAR OPTIONS

The Power Console Plus menus are:

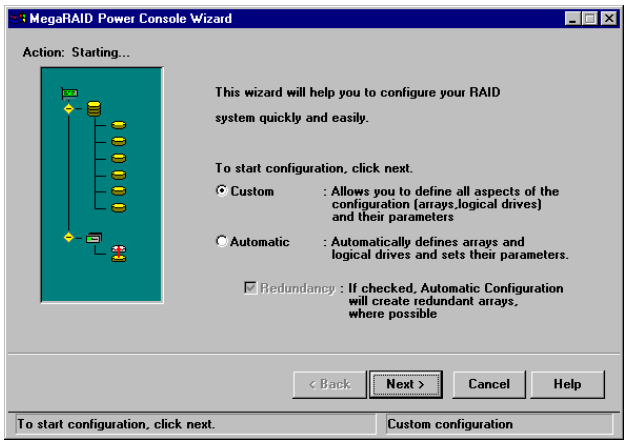
Option	Description
Configuration	Choose this option to start the Power Console Plus Wizard to configure the RAID system.
Adapter	Choose this option to select controller-related functions. You can enable or disable the speaker, and start the performance monitor.
Physical Drv	Choose this option to rebuild and display the properties of the physical drives.
Logical Drv	Choose this option to initialize, display the properties of, and check consistency of logical drives.
Progress	Choose this option to view the progress of a disk rebuild, initialization, check consistency, reconstruction or to view the performance monitor.
Help	Choose this to display information on Power Console Plus.

Configuration Menu



Wizard

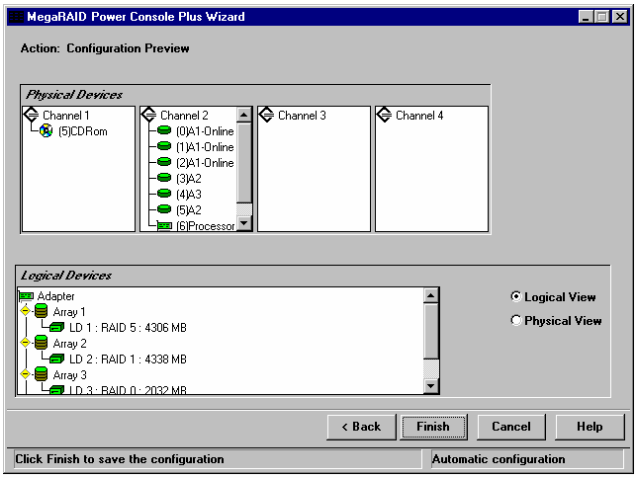
Choose Wizard to configure the drive. Choose Custom or Automatic array configuration. When Wizard starts, the following dialog box appears:


MegaRAID Power Console Wizard
Action: Starting...
This wizard will help you to configure your RAID system quickly and easily.
To start configuration, click next.
Custom : Allows you to define all aspects of the configuration (arrays,logical drives) and their parameters
Automatic : Automatically defines arrays and logical drives and sets their parameters.
Redundancy : If checked, Automatic Configuration will create redundant arrays, where possible
< Back
Next >
Cancel
Help
To start configuration, click next.
Custom configuration

This dialog box shows that Custom Configuration is being selected.

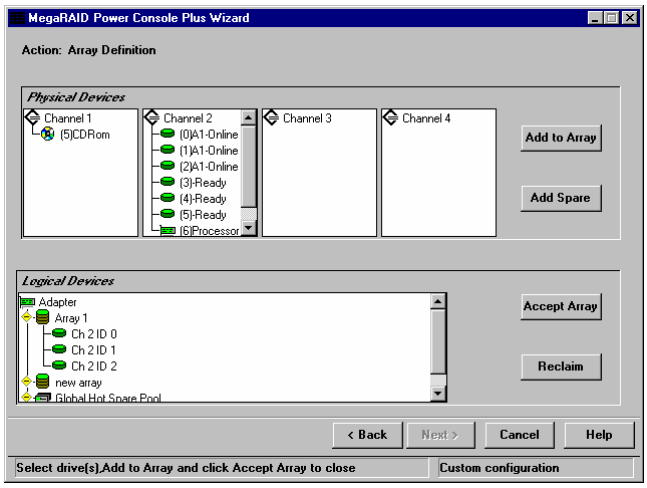
Automatic Configuration：

The Wizard examines the system (e.g., connected physical drives and check mark on Redundancy checkbox) and automatically configures an optimal RAID system. Select [Automatic] and click on [Next]. The screen as shown below appears.



Custom Configuration：

You can determine the configuration by specifying in detail the physical drives to be used and the logical drive to be created. Select [Custom], and click on [Next]. A screen as shown below appears.



Select the drive to configure the array and click on [Add to Array]. You cannot add a drive to an existing array while running the Wizard.

Select the drive for hot spare and click on [Add Spare] to add Hot Spare drives.

Even if it creates a hot spare and completes Wizard, it may not be displayed on a screen.

In that case, please click [Rescan].

Click on [Accept Array] if you approve the suggested configuration.

Click on [Reclaim] to clear the last configured array.

Click on [Next] to accept the proposed configuration. Follow the on-screen instructions to complete the configuration process.

It is satisfactory although the following logs may be registered at the time of creation of an array.

Source: MegaServ

ID: 6107

Description: CheckConsistency is COMPLETED.

Display

Choose this option to display the current RAID system configuration.

Print

Choose this option to print the current RAID system configuration.

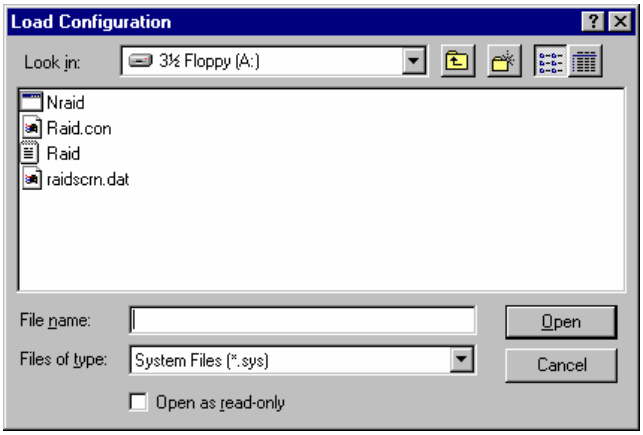
SAVE

Choose this option to save the current RAID configuration to a hard disk or floppy disk.

LOAD

Choose this option to load a previously saved RAID configuration. When this option is selected, the dialog box as shown below appears. Select the correct directory path and type the configuration filename.

> **IMPORTANT:** This feature is maintenance purpose only. The user should not execute any of these functions. Improper operation may cause a loss of data.



Clear Configuration

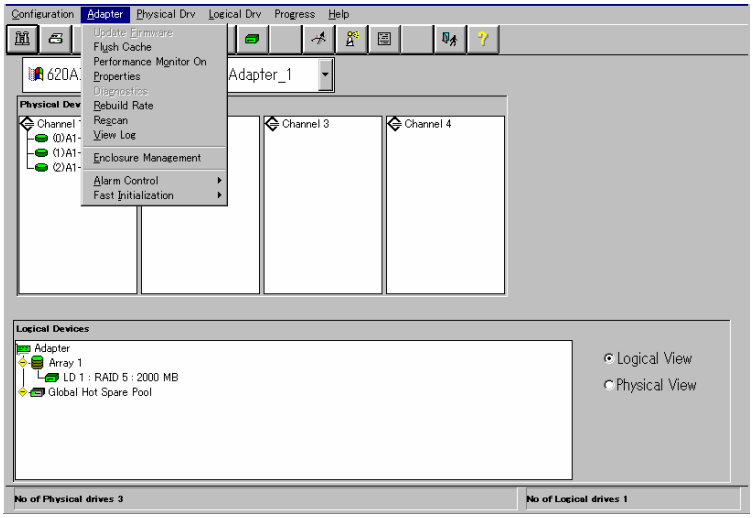
Clears the disk array configuration information.

> **IMPORTANT:** Do not use this feature. Otherwise, all configuration information will be erased.

EXIT

Choose this option to quit Power Console Plus.

Adapter Menu



The options on the Adapter menu are described below.

Option	Description	Remarks
Update Firmware	–	This option is not available.
Flush Cache	Choose this option to force the controller to write the contents of cache memory to the logical drives.	
Performance Monitor On/Off	Choose this option to graphically display the performance of a logical drive. You can select a bar graph or a line graph. This option can only turn this feature on or off.	
Properties	Choose this option to display the controller properties, including the SCSI specification type, cache memory size, rebuild rate, and firmware and BIOS versions.	
Diagnostics	–	This option is not available.
Rebuild Rate	Choose this option to change the rate at which drives are rebuilt.	
Rescan	Choose this option to scan the SCSI channels again.	
View Log	Choose this option to display a MegaRAID event log.	
View NVRAM Event Log	The log of NVRAM is displayed.	
View Bad Block Log	The Bad Block information on a drive is displayed.	
Enclose Management	Choose this option to manage the drives in each physical RAID drive cabinet. A picture of a RAID enclosure is displayed. The actual real-time state of each RAID channel is displayed. You can monitor the addition and removal of devices in the enclosure online.	

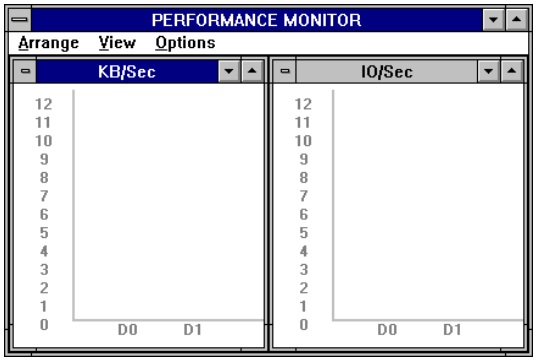
Option	Description	Remarks
Alarm Control	Choose this option to enable or disable the system alarm when the physical drive fails.	
Fast Initialization	Choose this option to enable or disable Fast Initialization.	
Battery Status	The battery information on a controller is displayed.	
S.M.A.R.T.Setting	S.M.A.R.T. Set up a function. Please do not change.	
Disable(Enable) Check Consistency Restoration	It is set up whether the mismatching detected with the adjustment check is restored. Please do not change.	
Disable(Enable) Temp Offline RAID	A Temp Offline function is set up. Please do not change.	
Manage Patrol Read	A Patrol Read function is set up.	

Flush Cache

If the MegaRAID system must be powered off immediately, you must flush the contents of the cache memory to preserve data integrity.

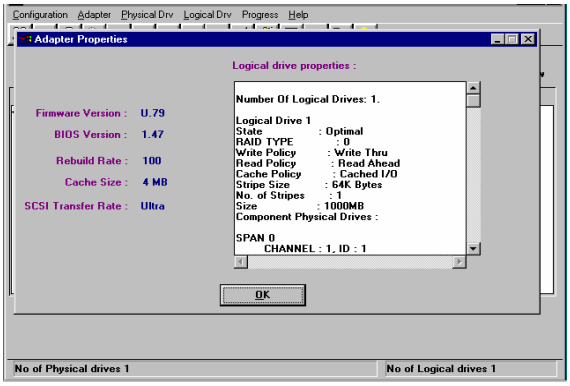
Performance Monitor

Choose Performance Monitor On from the Adapter menu to display a graphic representation of drive performance. Choose Performance Monitor Off to disable this feature. You can choose a logical drive, the type of graph, and the screen arrangement from this menu.



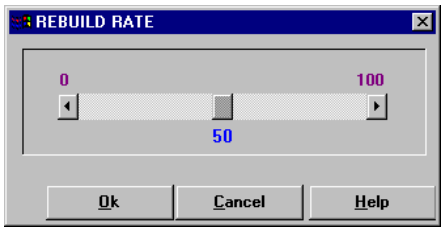
Properties

Choose this option to display the controller properties.


Configuration Adapter Physical Drv Logical Drv Progress Help
Adapter Properties
Logical drive properties :
Firmware Version : U.79
BIOS Version : 1.47
Rebuild Rate : 100
Cache Size : 4 MB
SCSI Transfer Rate : Ultra
Number Of Logical Drives: 1.
Logical Drive 1
State : Optimal
RAID TYPE : 0
Write Policy : Write Thru
Read Policy : Read Ahead
Cache Policy : Cached I/O
Stripe Size : 64K Bytes
No. of Stripes : 1
Size : 1000MB
Component Physical Drives :
SPAN 0
CHANNEL : 1, ID : 1
OK
No of Physical drives 1
No of Logical drives 1

Rebuild Rate

Choose Rebuild Rate to select the amount of system resources to be devoted to rebuilding failed disk drives. Click on the slider to select the percentage of system resources to devote to the disk rebuild and click [OK].



NOTE: The higher the percentage, the more computing power is devoted to the rebuild. Choose a low percentage to minimize system performance problems.

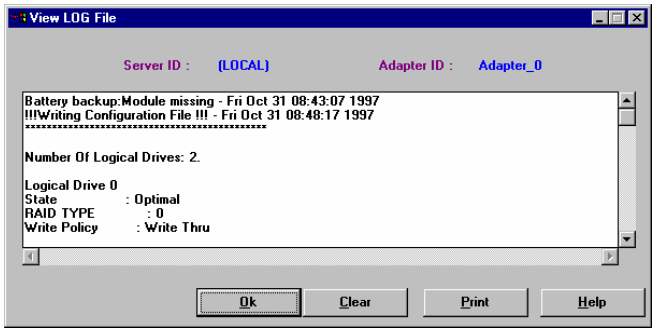
IMPORTANT: The higher rebuild rate may cause a system error. It recommends to set to equal to or less than 30.

Rescan

Choose this option to scan all SCSI channels again to update the status of all attached SCSI devices.

View Log

Select this option to display the MegaRAID event log.



View NVRAM Event Log

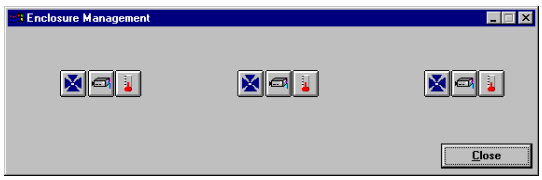
The log of NVRAM is displayed.

View Bad Block Log

The Bad Block information on a drive is displayed.

Enclosure Management

Displays the status of the RAID drive enclosures. Three icons for each drive enclosure appear. Click on an icon to display the cooling fan, power supply, or temperature for each drive enclosure.



Enclosure Management Icons

Displays the status of the power supply, fans, and temperature for drive enclosure appears when you click on one of the icons.

Icon	Description
	Displays the current status of the power supply in the enclosure for the selected subsystem.
	Displays the current status of the cooling fans in the enclosure for the selected subsystem.
	Displays the current temperature of the enclosure for the selected subsystem.

Alarm Control

The alarm generates a beeping sound when one or more physical disks fail. The sound continues until Silence Alarm is selected. After a rebuild finishes, a beep signals that the rebuild is done. Choose Silence Alarm at this time to silence the alarm. The alarm settings are:

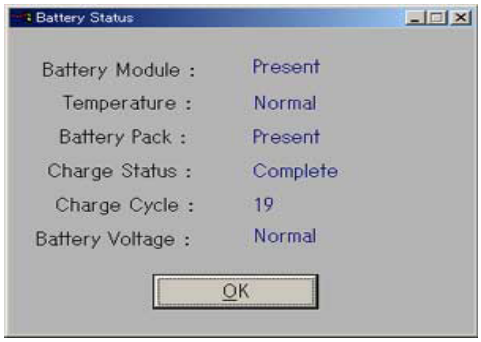
Setting	Description
Enable / Disable Alarm	When Alarm Control option is selected and if Disable Alarm appears, the alarm is enabled and can be disabled. If Enable Alarm appears, the alarm is disabled and can be enabled. When Enable Alarm is set, a beeping sound occurs even when all logical drives are online and there are no failed disks after a hot spare rebuild completes. Use the Silence Alarm function to stop the alarm.
Silence Alarm	Stops the alarm if it is currently beeping. If the alarm is not beeping, it has no effect.

Fast Initialization

Specify whether to perform fast initialization. Always set to "Enable" (default).

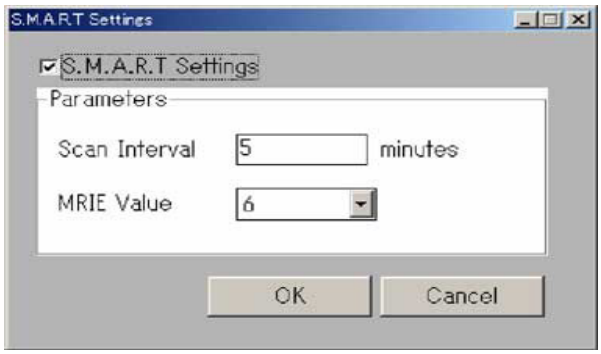
Battery Status

The battery information on a controller is displayed.



S.M.A.R.T. Setting

S.M.A.R.T. Set up a function. Please do not change.



Disable(Enable) Check Consistency Restoration

It is set up whether the mismatching detected with the adjustment check is restored.

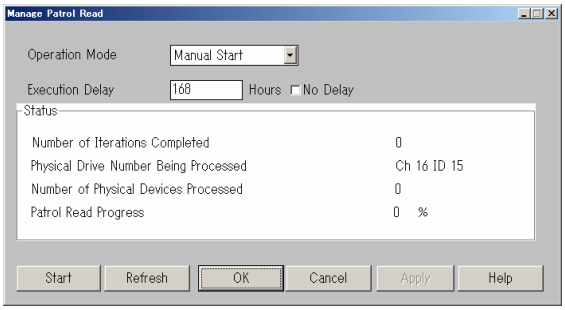
Please do not change.

Disable(Enable) Temp Offline RAID

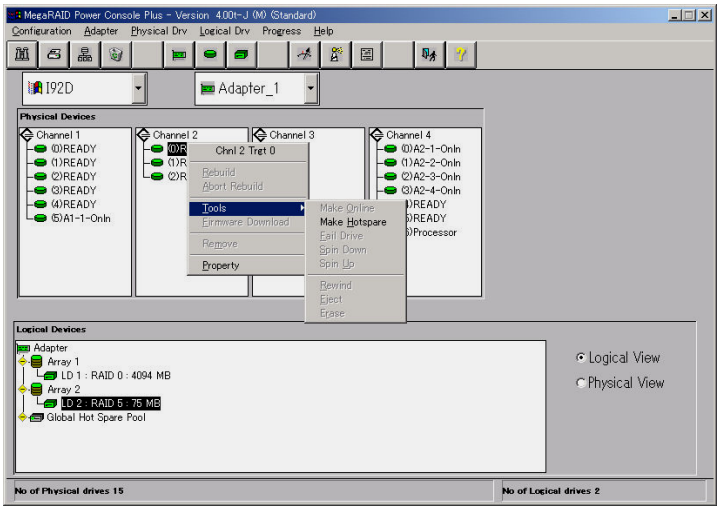
A Temp Offline function is set up.Please do not change.

Manage Patrol Read

A Patrol Read function is set up.



Physical Drive Menu



Rebuild

Choose the Rebuild option to rebuild one or more failed disk drives. Select [Abort Rebuild] to stop the rebuild process at any time. The drive will revert to its original status before the rebuild began.

A RAID 1 or 5 configuration has redundancy. If a drive in a RAID group fails, the RAID subsystem continues to work but no additional redundancy is provided. Another drive failure will bring the system down. But the failed drive can be replaced and added into the RAID system by rebuilding the drive. Select Rebuild to perform this function. The rebuild process can take place while the RAID system is still running, although performance may be slightly affected.

Update Drv Firmware

This option is not available.

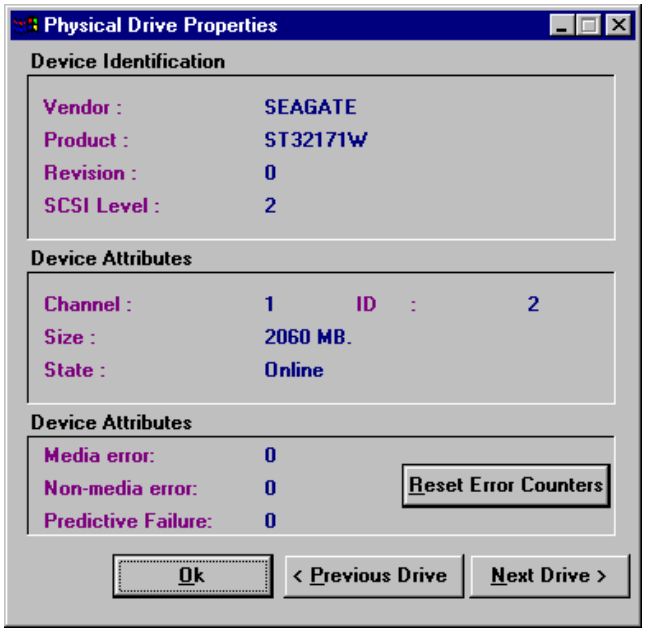
Change Status

Choose this option after you have selected a target physical drive.

Option	Description
Make Online	Choose this option to bring the selected physical drive online.
Fail Drive	Choose this option to take the selected physical drive offline.
Spin Up	Choose this option to allow a period of time for the selected physical drive to reach operational speed.
Spin Down	Choose this option to allow a period of time for the selected physical drive to stop spinning before taking the drive offline.
Make Hot Spare	Choose this option to designate the selected drive as a hot spare. Hot spares are automatically brought online to replace failed disk drives. Hot spares are physical drives that are powered up along with the RAID drives and usually are placed in a standby state. Hot spares can be used for RAID levels 1 and 5. Click on the drive icon of the drive to be made the hot spare. The drive to be made a hot spare must have the same or greater capacity than the other drives in the RAID array.

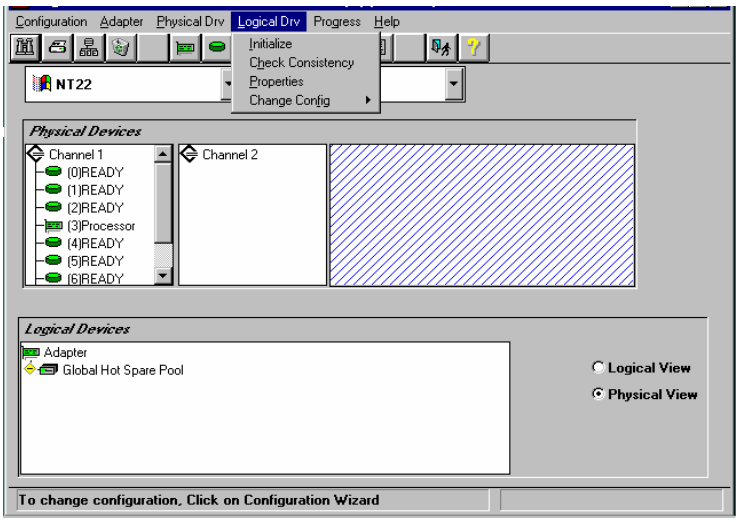
Property

Choose this option to display the properties of the selected physical drive.



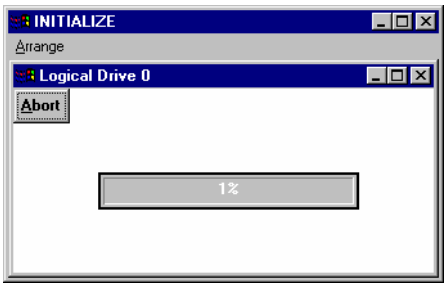
If you select [Processor] to display properties, the [Insertion] may be incorrectly displayed.

Logical Drv Menu



Initialize

Choose this option to initialize the selected logical drive or drives. You can view the progress of initialization. The time required for initialization depends on type and capacity of physical drive.



IMPORTANT: Power Console Plus allows you to initialize a drive at any time. Make sure that the drive being initialized does not have live data. All data will be lost.

Check Consistency

Choose this option to verify the redundancy data in logical drives that use RAID levels 1 or 5.

Select the logical drive to be checked and choose [Check Consistency] from the [Logical Drv] menu.

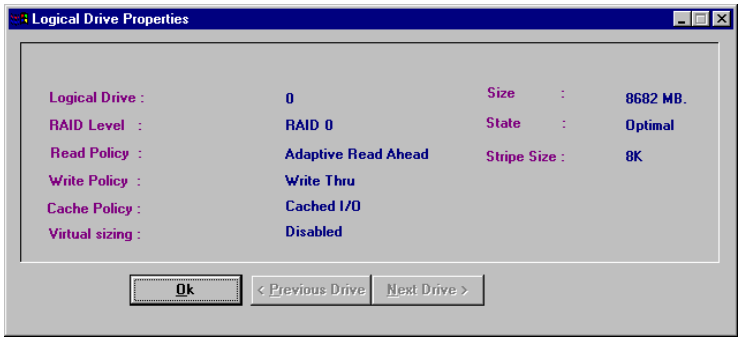
You are prompted to run parity checking. Click on [OK] to perform parity checking.

Parity Checking Selected Device(s) ?

If a discrepancy is found, it is automatically corrected. However, if the failure is a read error on a data drive, the bad data block is reassigned with the generated data.

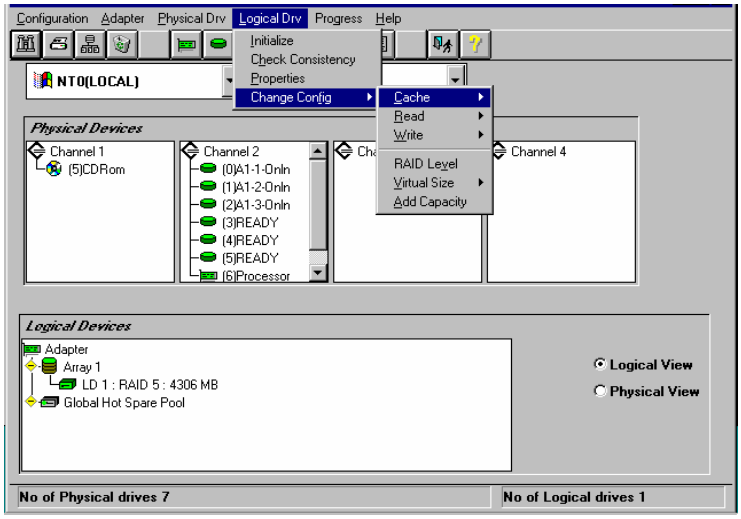
Properties

Choose [Properties] to display the properties of the selected logical drive. Each logical drive can be displayed by selecting the [Previous] or [Next] buttons. Indications on the screen may not be aligned, however, it will not affect on other operation.



Change Config

You can change Cache Policy, change Read Policy, change Write Policy, and change the RAID level via this sub-menu.



– Change Cache Policy

You can choose Direct or Cached.

– Change Read Policy

You can choose Normal, Read Ahead, or Adaptive Read Ahead.

Read Policy	Description
Normal	The controller does not use read-ahead for the selected logical drive. This is the default setting.
Read Ahead	The controller uses read-ahead for the selected logical drive.
Adaptive Read Ahead	The controller uses read-ahead if the two continuous disk accesses occurred in sequential sectors. If all read requests are random, the controller does not use read-ahead. However, all requests are still evaluated for possible sequential operation.

Change Write Policy

You can choose Write Back or Write Thru.

Write Policy	Description
Write Back	The controller sends a data transfer completion signal to the host when the controller cache has received all the data in a transaction.
Write Thru	The controller sends a data transfer completion signal to the host when the disk array has received all the data in a transaction. This is the default setting. Write Thru has a data security advantage over Write Back. Write Back has a performance advantage over Write Thru.

Virtual Sizing

This feature is not available.

Add Capacity

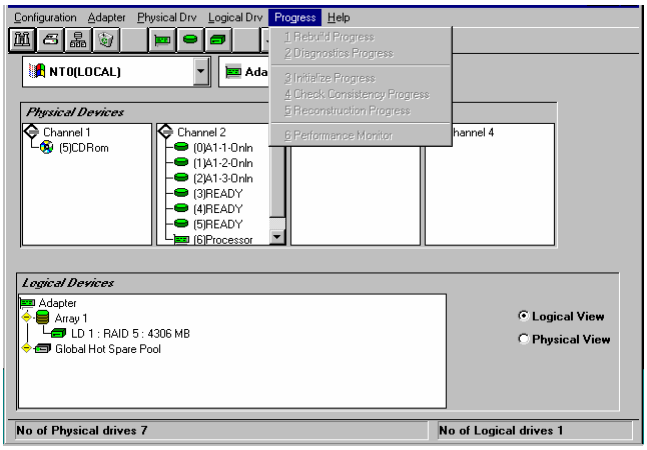
Click on this option to add additional physical drive(s) to the specified logical drive. First click on the drive icon for each physical drive to be added. Then click on the icon for the logical drive to be added to. Then select [Add Capacity] from the [Logical Drv] menu. Click on [OK] when prompted to confirm the new logical drive configuration. Select a new RAID level. You can select any RAID level that is not grayed out. Click on [APPLY] to complete the operation.

NOTES:

- The physical drive must be in the READY state before it can be added to a logical drive.
- No operation can be started while a drive is being reconstructed.
- With Windows 2000, Add Capacity is available only for basic disk, not for dynamic disk.

Progress Menu

The features on this menu are available only when a rebuild, initialization, check consistency, or drive reconstruction are in progress.



Option	Description
Rebuild Progress	Displays the progress of rebuild process.
Diagnostics Progress	Displays the progress of diagnostics test.
Initialize Progress	Displays the progress of initialization.
Check Consistency Progress	Displays the progress of Check Consistency.
Reconstruction Progress	Displays the progress of reconstruction.
Performance Monitor	Displays the Performance Monitor screen.

5. Running Power Console Plus

This section describes how to run Power Console Plus.

Described below is simple terminology and basic operations.

Drive Status

The statuses of each physical drive shown to the right of the SCSI ID or array are as follows:

Drive Status	Code	Description
Online	Onln	The physical drive works normally. It is part of a configured logical drive.
Ready	READY	The physical drive works normally. It is not part of a configured logical drive and is not a hot spare. It is sometimes displayed with “Master”, too.
Hot Spare	HOTSP	The drive is available as a spare drive in case an online physical drive fails.
Failed	Failed	The physical drive is out of service because it failed.
Rebuild	Rebuild	The physical drive is being rebuilt.

Logical Devices

Logical Devices View displays the configured arrays, logical drives, and hot spares and global hot spare pool of the current controller.

Click on [Logical View] radio button on Logical Devices View to display the configured logical drives. Click on [Physical View] to display the configured physical drives.

When you delete the created logical drive, please do [Delete] from the menu which chooses a logical drive and is displayed by right-click. Be careful not to use it accidentally.

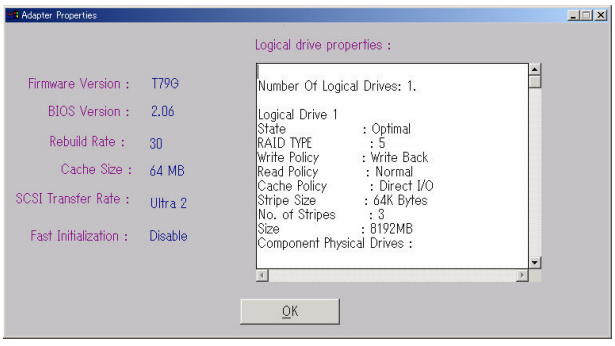
Moreover, when two or more logical drives exist, please delete from the logical drive created at the end. When it deletes except the last logical drive, the composition information on an array may break.

Displaying Adapter (Controller) Properties

Click on [Properties] in [Adapter] menu to display the adapter properties as shown in the figure.

You can view the firmware version, BIOS version, and rebuild rate of the current controller.

You can also view the RAID level and size of the logical drive created in the current controller.

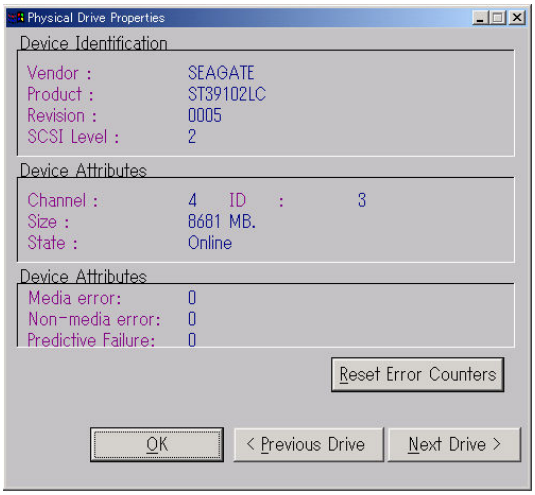

Adapter Properties
Logical drive properties :
Firmware Version : T79G
BIOS Version : 2.06
Rebuild Rate : 30
Cache Size : 64 MB
SCSI Transfer Rate : Ultra 2
Fast Initialization : Disable
Number Of Logical Drives: 1.
Logical Drive 1
State : Optimal
RAID TYPE : 5
Write Policy : Write Back
Read Policy : Normal
Cache Policy : Direct I/O
Stripe Size : 64K Bytes
No. of Stripes : 3
Size : 8192MB
Component Physical Drives :
OK

Displaying Physical Drive Properties

Double-click on the icon that represents the physical drive to display the properties of the selected physical drive as shown in the figure.

You can view the vendor and size of physical drive.

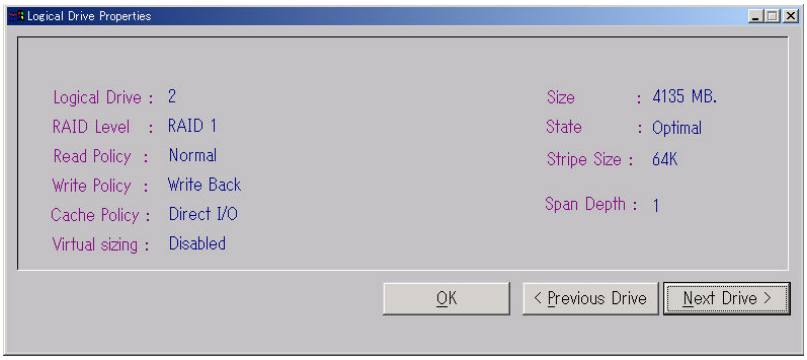
You can view the properties of each physical drive by clicking [Previous Drive] or [Next Drive].



Displaying Logical Drive Properties

Double-click on the icon that represents the logical drive to display the properties of the selected logical drive as shown in the figure.

You can view the RAID level, read policy, and size of the logical drive.



Choose an Adapter (Controller)

If the current controller is not the controller to be configured, click on the [Adapter] box and select the correct adapter.

Power Console Plus can control the controllers displayed in the Adapter box. When multiple controllers are connected to the server, you can select a controller in Adapter box you want to make MegaRAID Client monitor and control.

5.1 CONFIGURING ARRAYS AND LOGICAL DRIVES

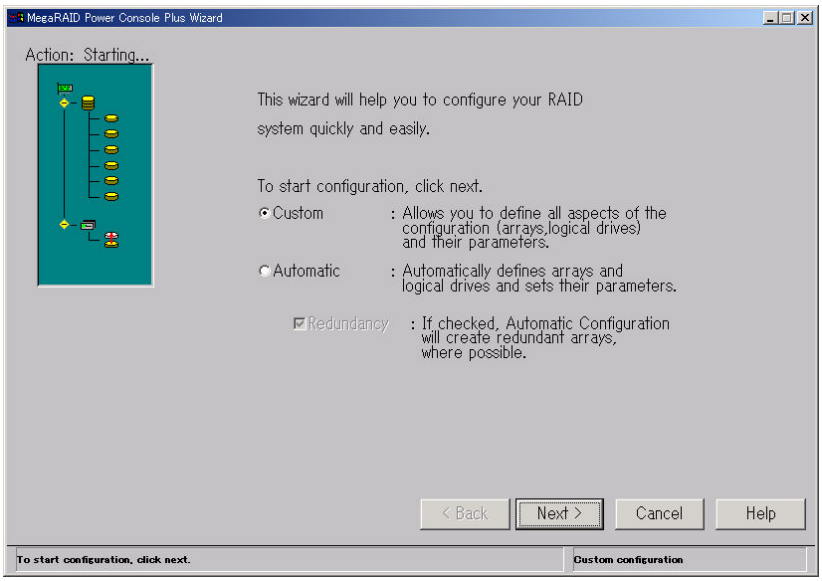
This section describes how to configure arrays and logical drives.

Step 1

Choose Wizard from the Configuration menu.

The Wizard screen appears. Choose [Custom] or [Automatic] mode and click on [Next].

Go to Step 4 if you choose [Automatic] mode.


MegaRAID Power Console Plus Wizard
Action: Starting...
This wizard will help you to configure your RAID system quickly and easily.
To start configuration, click next.
Custom : Allows you to define all aspects of the configuration (arrays,logical drives) and their parameters.
Automatic : Automatically defines arrays and logical drives and sets their parameters.
Redundancy : If checked, Automatic Configuration will create redundant arrays, where possible.
< Back
Next >
Cancel
Help
To start configuration, click next.
Custom configuration

NOTE: Types of Configuration

You can choose either Custom or Automatic configuration.

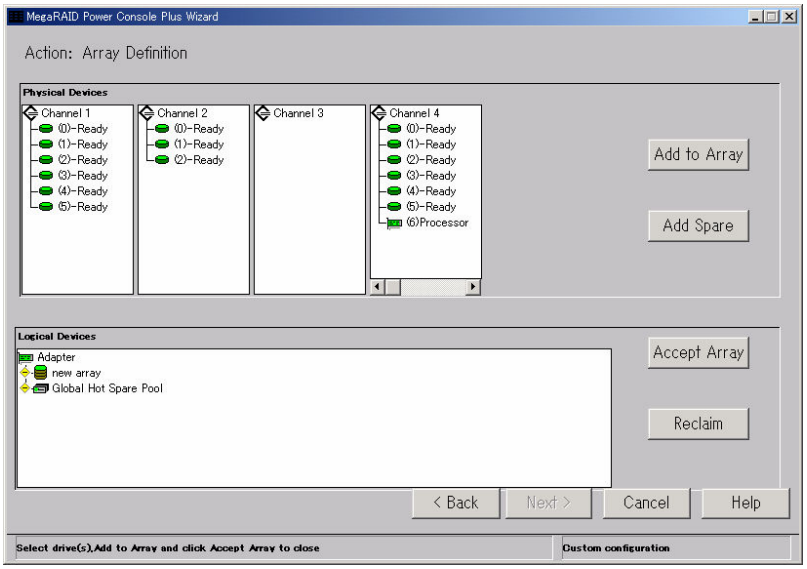
Type	Description
Custom	Set parameters to define the arrays and logical drives. Select this option if you have specific requirements for the RAID system.
Automatic	Wizard automatically sets all parameters and defines arrays and logical drives. Click on the [Redundancy] box to configure the redundant arrays. Select this option to configure an optimal RAID system.

Step 2

Select a physical drive in the Ready status.

Click on [Add to Array] button to assign physical drives to the new array.

Click on [Accept Array] button, and then click on [Next] button.



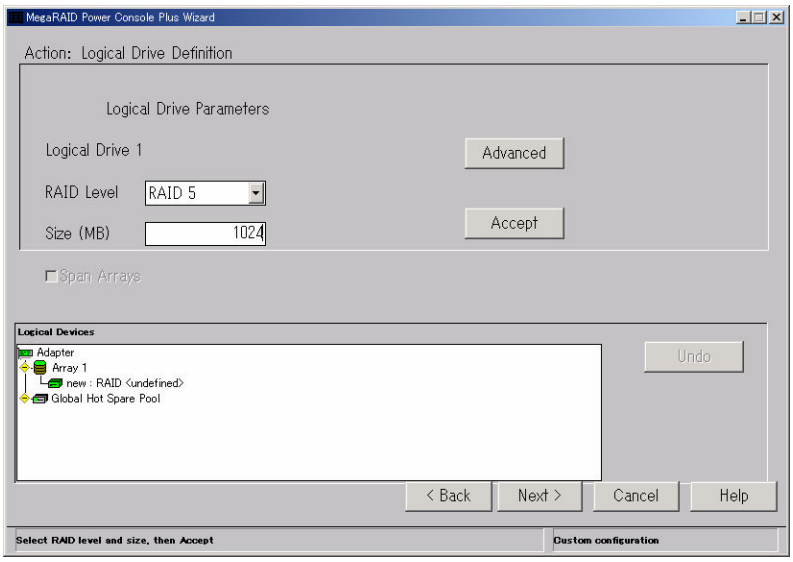
NOTE:: Assign all physical disks used to configure a logical disk to [New Array]. For example, to configure the array of RAID5 level, at least three physical drives are required.

Step 3

Specify the RAID level and size of the logical drives.

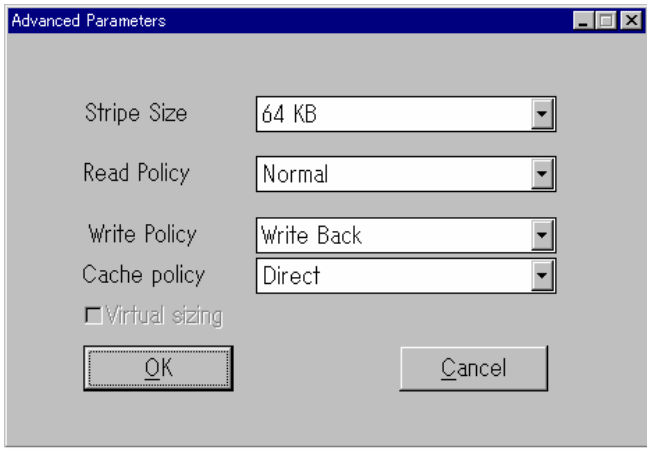
Click on [Accept] button, and then [Next] button.

Click on [Advanced] button if you want to set the advanced parameter (e.g., write policy).



Setting Advanced Parameter

Set each parameter on the screen.

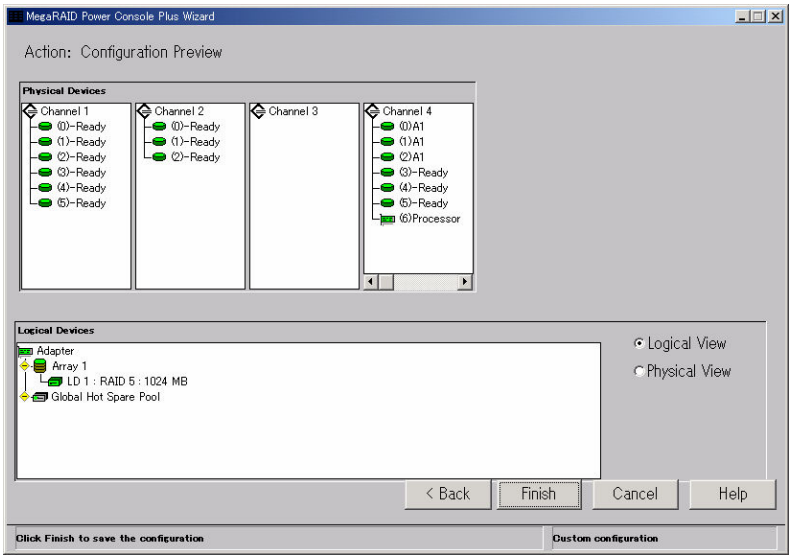


NOTE: Some parameter values may be restricted to ensure the system performance and stable operation. Refer to the manual that comes with your controller.

Step 4

Verify the array configuration on the screen.

When verified, click on [Finish] button.



NOTE: In the example shown below, Array1 (A1) containing a logical drive (RAID5, 1024MB) is created with three physical drives (ID0 to ID2) in channel 4.

Step 5

Click on [OK] in the confirmation screen.

The new configuration is saved in the controller.

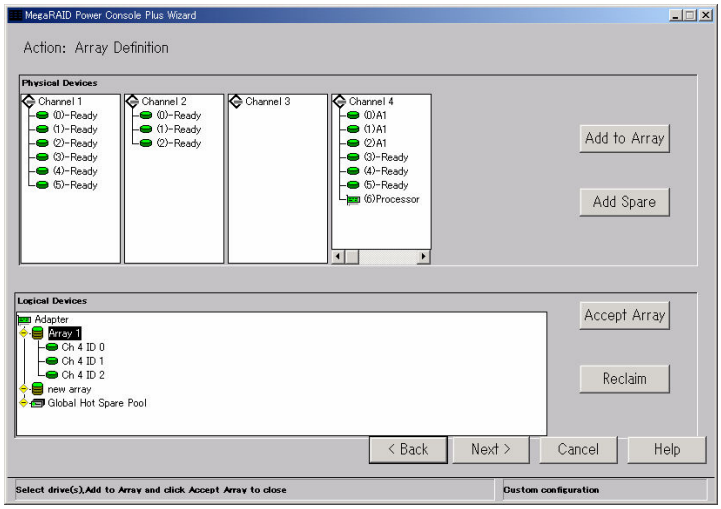
Step 6

Click on [OK] in the confirmation screen.

Initializes the logical drive.

NOTE: If you canceled, select the logical drive on [Logical Devices View] in main menu, select [Initialize] in [Logical Drv] menu to initialize the drive.

Changing Array Configuration



To change array configuration, select an icon of logical drive to be changed in [Logical Devices View], and click [Reclaim]. Click on [OK] in the confirmation screen. After that, repeat from Step 2. If no logical drives are defined in the array (Step 3 or earlier), click on [Back] to display the Array Definition screen and begin the configuration process again.

Adding a Physical Drive to an Existing Array

You cannot add a physical drive to an array while running the Configuration Wizard.

NOTE: To add a physical drive to an existing array, see Section 5.4.

5.2 REBUILDING PHYSICAL DRIVE

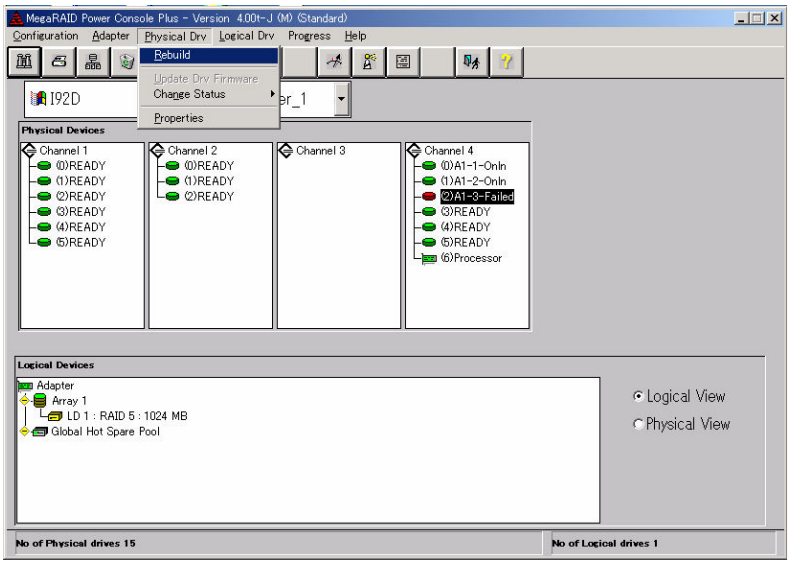
This section describes how to rebuild the physical drive.

Step 1

On [Physical Devices View] in the main menu, select a physical drive you want to rebuild (icon representing physical drive being failed).

Select [Rebuild] in Physical Drv menu.

Rebuild starts and a progress chart is displayed on the screen as shown below.

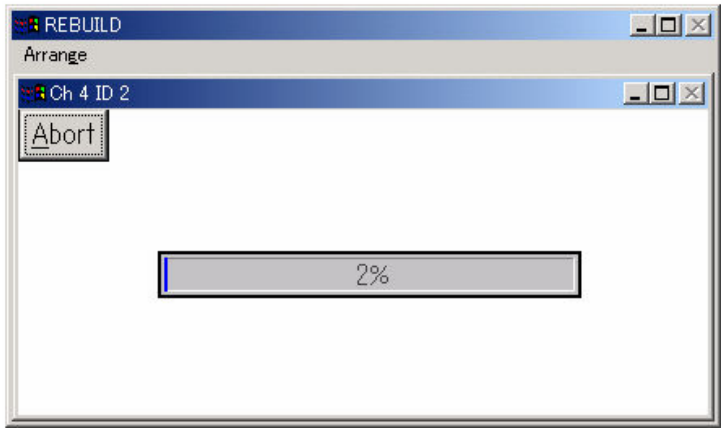


Step 2

Click on [OK] in the confirmation screen.

NOTES:

- Clicking on [Abort] button while the progress of rebuild is being displayed forcedly stops rebuild process.
- It is recommended to check the status of logical drive after the physical drive is rebuilt. For Check Consistency, see Section 5.3.



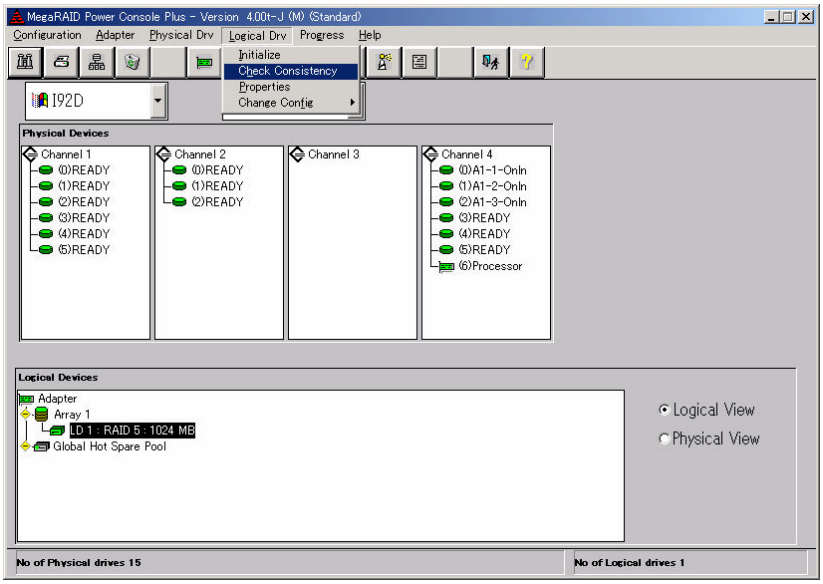
5.3 CHECK CONSISTENCY ON LOGICAL DRIVE

This section describes how to perform consistency check on logical drive.

Step 1

Select an icon of logical drive to be checked in [Logical Devices View] on main menu.

Select [Check Consistency] in [Logical Drv] menu.

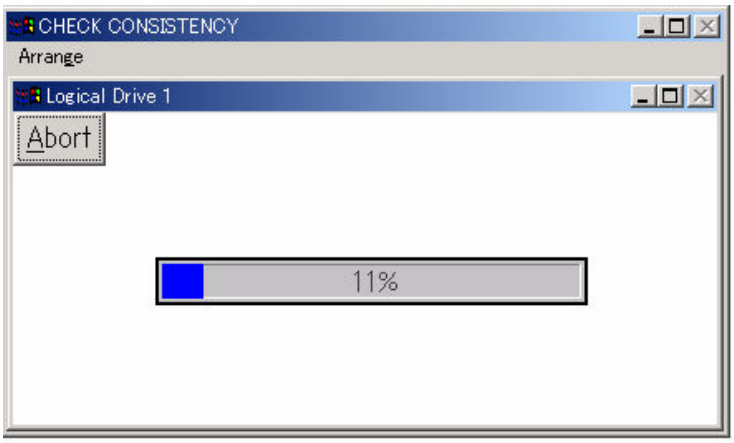


Step 2

Click on [OK] in the confirmation screen.

Check Consistency starts and a progress chart is displayed on the screen as shown below.

NOTE: Clicking on [Abort] button while the progress chart is being displayed forcedly stops Check Consistency process.



5.4 ONLINE CAPACITY EXPANSION

This section describes the procedures for online capacity expansion.

Add Capacity

You can add a physical drive to an existing array to expand capacity only under the following conditions:

Only one logical drive is configured per array. (If two or more logical drives are configured, Add Capacity feature is unavailable.)

For Windows 2000, Add Capacity is available only for basic disk, not for dynamic disk.

Please reboot OS, after Add Capacity is completed. If it does not reboot, an error event may be periodically registered into the event log of OS.

NOTE: Available RAID level for the capacity added array depends on the number of physical disks configuring the array.

Two physical drives: RAID 0 or 1

Three or more physical drives: RAID 0 or 5

New drive(s) can be added to the SCSI bus or subsystem (e.g., disk rack).

IMPORTANT: It is recommended to make backup copy of partition on logical drive before adding capacity.

After Add Capacity completion should reboot OS.
When not rebooting The following error events may be periodically registered into the Event Log(Application Log) of OS.

Source : MegaServ.Log
ID : 6302
Type : Error
Description : Check Consistency FAILED.

Source : MegaServ.Log
ID : 6201
Type : Warning
Description : Check Consistency is OVER and it has corrected some problem.

Source : MegaServ.Log
ID : 6102
Type : Information
Description : Check Consistency is OVER and it has not found any problem.

Adding Capacity using Power Console Plus

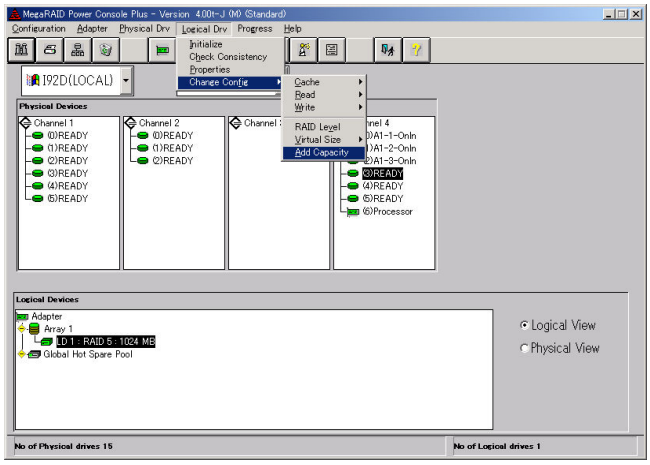
On the main Power Console Plus screen, verify that the drive(s) that are added display on the appropriate channel. There are three ways you can add a physical drive to an existing array.

The first method is:

Step 1

On [Physical Devices View] of the main menu, select physical drive(s) you want to add, and on [Logical Devices View], select the logical drive to add them to.

Select [Add Capacity] in [Change Configuration] of Logical Drv menu.



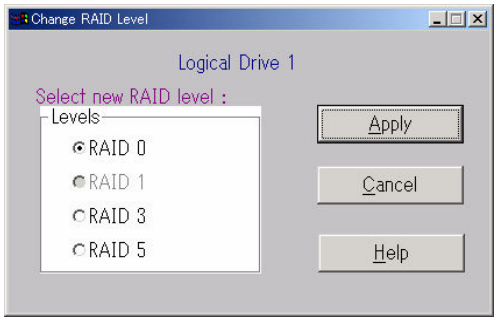
Step 2

Click on [OK] in the confirmation screen.

Step 3

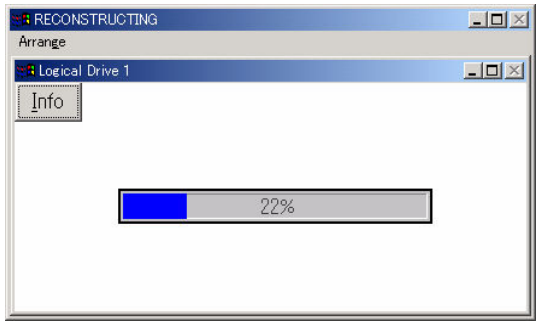
A menu to select the RAID level is displayed.

Select a RAID level and click on [Apply] button.



Step 4

Array reconstruction (Add Capacity) starts and a progress chart is displayed on the screen as shown below.



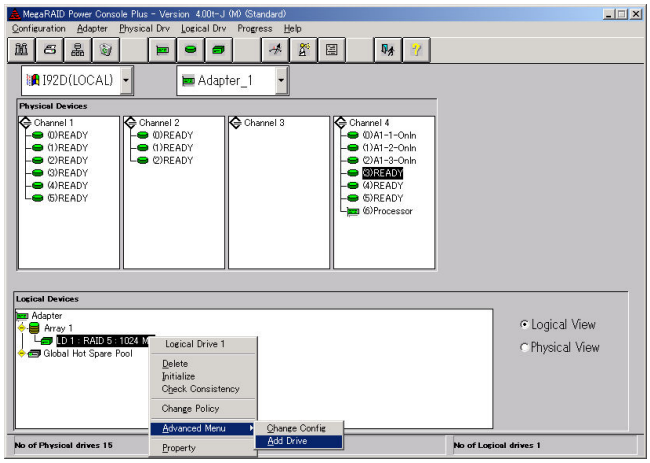
NOTE: You can view the information on logical drive and physical drives to be added by clicking on [Info] button while the progress chart is being displayed.

The second method is:

Step 1

On [Physical Devices View] of the main menu, select the physical drive(s) you want to add, and on [Logical Devices View], select the logical drive to add them to.

Right-click on the logical drive, and select [Add Drive] in Advanced menu.



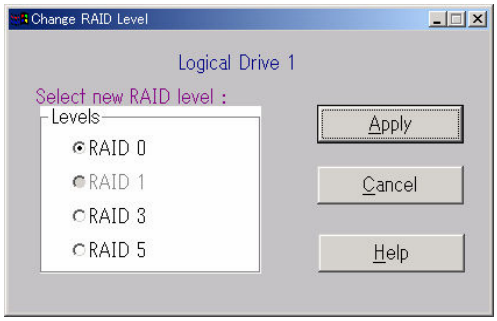
Step 2

Click on [OK] in the confirmation screen.

Step 3

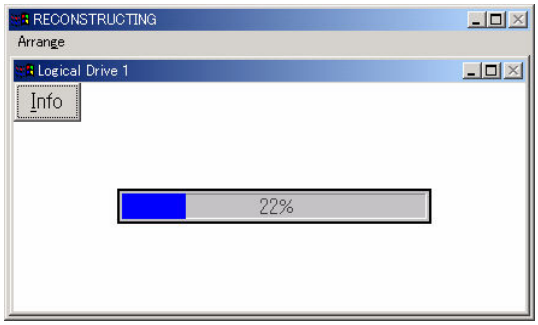
A menu to select the RAID level is displayed.

Select a RAID level and click on [Apply] button.



Step 4

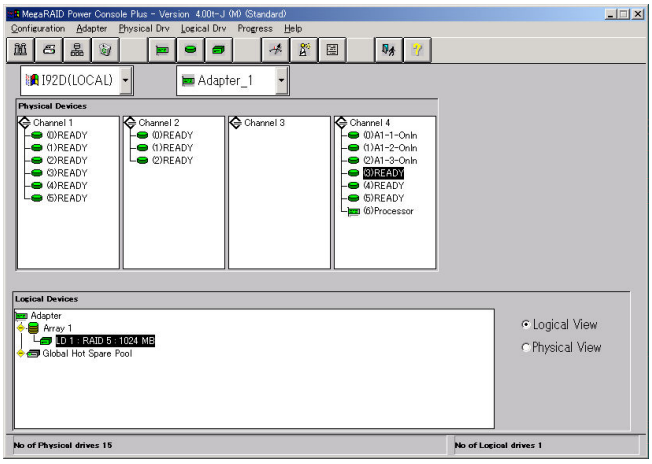
Array reconstruction (Add Capacity) starts and a progress chart is displayed on the screen as shown below.



The third method is:

Step 1

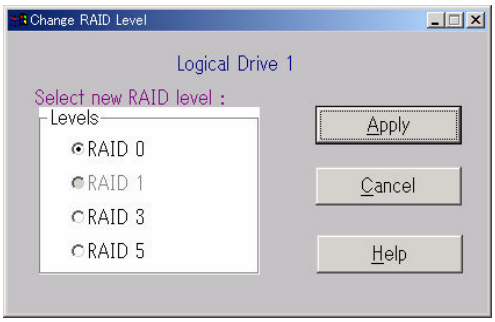
On [Physical Devices View] of the main menu, select the physical drive(s) icon you want to add, and drag it to the logical drive icon you want to add them to.



Step 2

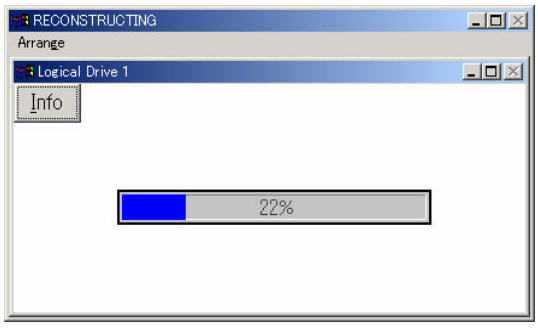
A menu to select the RAID level is displayed.

Select a RAID level and click on [Apply] button.



Step 3

Array reconstruction (Add Capacity) starts and a progress chart is displayed on the screen as shown below.



Subsequently, create a partition on Windows.

6. Periodic Consistency Check

Make a periodic consistency check on array disks and correct inconsistency detected. Doing so prevents a failure in rebuilding a failing physical drive. A consistency check must be made on the whole Read section of the logical drive. This means that areas of the physical drives, which are not usually accessed, are accessed all together. Thus, the consistency check command also enables detection of an imminent physical drive failure. Making a periodic consistency check decreases the multi-drive failure rate and maintains the steady operation of the array system.

Periodic consistency check can be performed by running Check Consistency command from the command prompt. The command is for scheduling. When consistency check is scheduled and performed, the running status including start, end, and at every 15 minutes is output to event log.

Requirements to execute the Check Consistency command

LSI Logic disk array controller must be connected.

Power Console Plus must be installed.

The MegaServ service is available.

Execute form

Format

megactrl arg1 [arg2 [arg3 [arg4 [...]]]]

(megactrl.exe is installed generally in "c:\winnt\system32" when Power Console Plus is installed.)

IMPORTANT: Do not use any other parameters than described below.

	Argument	Description
arg1	-cons	Sets a consistency check schedule. Other arg parameters are used to set time. If no other arg parameters are specified, relevant default is used.
arg2 to argi	-h	Sets the start time of the consistency check. The time can be set in the range from 0 to 23. (The default start time is 0.)
	-d	Sets the day of the week on which the consistency check is made in the range from 0 to 6. (The default day is 0 (Sunday).)
	-w	Sets intervals of 0 to 24 weeks at which the consistency check is made. -w0 indicates that the consistency check is made every day. (The default interval is 1 week.)
	-dateMM/DD/YYYY	Sets the start date of the consistency check. (The default start date is the command execution date.) YYYY ranges from 1900 to 2038. (A year over 2038 cannot be specified.)
	-abort	Terminates the consistency check if it is in progress.
argi	-enChkCon	Executes the consistency check command at the scheduled time. (Default)
	-disChkCon	Suppresses the consistency check at the scheduled time. This suppression does not affect the current consistency check. If -disChkCon is specified with -enChkCon, the last-specified one is valid.

Examples of use

Executing the consistency check command at 00:00 every Sunday

```
megactrl  -cons  -h0  -d0  -w1
```

Terminating all the consistency checks of all controllers

```
megactrl  -cons  -abort
```

Disabling the consistency check schedule

```
megactrl  -disChkCon
```

Enabling the consistency check schedule

```
megactrl  -enChkCon
```

NOTE: The above commands need directory specification depending on the setting of the system path.

Example: C:\winnt\system32\megactrl -cons

7. Notes

1. The following event log is sometimes registered when uninstalling Power Console Plus. But there is no problem.

Source: Service Control Manager
Event ID: 7031
Description: The SNMP Service service terminated unexpectedly. It has done this 1 time(s).

Source: NobelNet Portmapper
Event ID: 0
Description: NobelNet Portmapper error